CLASS 57, TEXTILES: SPINNING, TWISTING, AND TWINING

SECTION I - CLASS DEFINITION

This class includes processes and apparatus for: (1) Producing strands of indefinite length by means of a twisting, twining and/or untwisting operation; (2) Twisting filamentary and/or fibrous material into yarns, threads, cords, ropes, wire ropes, cables, etc.; (3) Other operations such as attenuating, drafting or drawing fibrous material, when combined with twisting or twining, and not elsewhere classified; (4) Covering cores of indefinite length when including or followed by a twisting or twining Operation. The products of the above are also included where not elsewhere classified.

(1) Note. Spinning, as it is known in the art with reference to the production of yarns, etc., from cotton, wool and/or other fibrous materials, includes the attenuating, drawing or drafting of the fibrous material, together with the twisting and winding thereof. See Subclass References to the Current Class, below. Subcombinations of spinning devices (except drawing, which is found elsewhere; see References to Other Classes, below) are found elsewhere in this class.

It is noted that “silk throwing” is sometimes spoken of as “spinning”. The term is considered properly applied only when operating on short fiber silk or short lengths of artificial filaments or waste of such, and in the same manner as cotton, wool and other fibrous materials are spun.

(2) Note. The term “twisting couple” as employed in this class defines that part of a spinning or twisting machine comprising a strand receiver and an element cooperating therewith to twist and wind the strand material. One element of the couple by its rotation or revolution twists the strand. The relative rotation between one element and the other causes the winding when the elements are concentric or coaxial.

SECTION II - LINES WITH OTHER CLASSES AND WITHIN THIS CLASS

The term “spinning” is sometimes applied to the production of artificial filaments by extrusion of material through a spinneret. Apparatus for such production of the filaments with or without subsequent twist thereof is in Class 425, Plastic Articles or Earthenware Shaping or Treating: Apparatus, subclasses 66 and 67+.

The line between this class and Class 174, Electricity: Conductors and Insulators, is as follows: Patents claiming only conductor structure are found in Class 174. Patents claiming strand structure of twisted or twined form and not limited to conductors are found in this class (57), subclasses 200+.

The line between this class (57) and Class 29, Metal Working, is as follows: Original patents claiming method of, or means for twisting a plurality of elongated filamentary materials together to form a solid cable or “wire rope” are found: (a) in this class (57) if the material is nonmetal or if the material is metal that is clearly not stressed beyond its elastic limit; or (b) in Class 29 if the material is metal that is operated upon as by tension, stress beyond elastic limit, or equivalent deformation, to produce a “permanent” set in the material. Within Class 29, subclasses 428+ is the locus of method claims, and subclasses 700+ the locus of apparatus claims, directed to the subject matter set forth above.

SECTION III - SUBCLASS REFERENCES TO THE CURRENT CLASS

SEE OR SEARCH THIS CLASS, SUBCLASS:

315+, for the attenuating, drawing or drafting of fibrous material, together with the twisting and winding thereof.

(1) Note. Since continuous filamentary material ordinarily cannot be drafted, the term “spinning” as employed in this class cannot be applied to the twisting of silk in filamentary form, continuous artificial filaments, wires, etc. Consequently, search for devices for operating on such material should not be made in subclass 315.

SECTION IV - REFERENCES TO OTHER CLASSES

SEE OR SEARCH CLASS:

19, Textiles: Fiber Preparation, subclasses 236+. for drawing, carding and other fiber preparation involving no twisting.

72, Metal Deforming, subclasses 343+ for the process of making a spinning machine forging die by metal deforming operation.

72, Metal Deforming, subclasses 462+, for the process of making a weaver implement or iron by means of a forging die.

87, Textiles: Braiding, Netting, and Lace Making, for braiding, netting and lace making.

140, Wireworking, subclass 149, and Class 72, Metal Deforming, subclasses 64+.

242, Winding, Tensioning, or Guiding, for winding or unwinding operations wherein no spinning, twisting or twining is involved.

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, particularly subclass 103, 145+, 164, and 165+ for processes for production of artificial filaments by extrusion through a spinneret with or without subsequent twisting thereof.

SUBCLASSES

1 This subclass is indented under the class definition. Subject matter comprising apparatus for spinning, twisting, or twining, processes involving the use of such apparatus not classified elsewhere, or processes for spinning, twisting, or twining not limited to the use of such apparatus.

(1) Note. The subject matter of these subclasses indented hereunder, which subject matter is defined in apparatus terms, should be understood to encompass the apparatus as defined and processes involving the use of such apparatus.

2 Apparatus for both stapilizing and twisting continuous filament yarns or bundles to produce spun or simulated spun yarn.

(1) Note. The stapilizing operation may be performed upon individual continuous filaments, a tow or slightly twisted bundle of such filaments, or upon a yarn produced by twisting such filaments.

SEE OR SEARCH THIS CLASS, SUBCLASS:

91, and 317+, for means for producing yarn of irregular form by irregularity in the feeding of strand material to the twisting instrumentalities.

SEE OR SEARCH CLASS:

19, Textiles: Fiber Preparation, subclasses .3+ for the combination of a significantly claimed stapilizing process or apparatus with a twisting method or means not claimed significantly, also for stapilizing processes and apparatus per se.

2.3 This subclass is indented under subclass 1. Devices for untwisting or untwining strand material and leading at least one of the former component strands away from the untwisting zone along a path distinct from that followed by the remainder of such component strands.

2.5 This subclass is indented under subclass 2.3. Apparatus including means for winding into a package at least one of the separated component strands.

3 Apparatus for winding one or more strands spirally about a core to form a strand of indefinite length.

(1) Note. For apparatus for covering wire by an operation other than spiral winding, such as, for example, by folding, see the Search Notes below.

SEE OR SEARCH THIS CLASS, SUBCLASS:

21, for apparatus for forming endless bands by winding strands about a core.

22, and 23, for apparatus for splicing strands which may also include covering or wrapping operations.

24, for comparison with this subclass.

SEE OR SEARCH CLASS:

28, Textiles: Manufacturing, subclass 176 for apparatus for winding a thread spirally around a warp chain.

29, Metal Working, subclass 202.5 for a cable wrapping device which “sets” the wrapping material by means other than the mere application, and see (1) Note thereunder.

53, Package Making, appropriate subclasses for methods of and apparatus

for encompassing or encasing goods or materials with a separate cover or band which serves as means for identifying, protecting or unit handling the goods or materials, especially subclasses 203+ and subclasses 204 and 210+ indented thereunder for apparatus to wrap a contents to form a package.

156, Adhesive Bonding and Miscellaneous Chemical Manufacture, appropriate subclasses for laminating processes and apparatus and especially subclasses 51+ for covering electrical conductors of indefinite length, subclasses 169+ for processes of winding strands about a core, and subclasses 184+ for processes of winding a sheet or web about a core.

242, Winding, Tensioning, or Guiding, subclasses 434+ for ring winding and subclasses 430+ for forming an article by winding material onto a core.

3.5 This subclass is indented under subclass 3. Devices including means for opening a twisted or twined strand having a core, removing the core, inserting a new core, and closing the remaining strands about such new core.

(1) Note. The strand structure is usually untwisted for removal of the old core and retwisted after insertion of the new core, in a continuous operation, in which case the total twisting operation consists of the imposition of a temporary or false twist.

SEE OR SEARCH THIS CLASS, SUBCLASS:

328+, for false twisters combined with drawing apparatus.

332+, for false twist devices per se.

4 This subclass is indented under subclass 3. Devices for feeding and wrapping horsehair, grass, quillstock, and the like with one or more strands. Quillstock is prepared from quills of feathers.

SEE OR SEARCH CLASS:

19, Textiles: Fiber Preparation, subclass 4 .

223, Apparel Apparatus, subclass 27.

5 This subclass is indented under subclass 3. Apparatus for applying loosely associated, untwisted or substantially untwisted fibers spirally about a core. Compacting the fibers about the core is included, when in combination with the applying means.

SEE OR SEARCH CLASS:

19, Textiles: Fiber Preparation, subclass 145 and 150+ for comparison with this subclass (5).

6 This subclass is indented under subclass 3. Devices combined with apparatus for performing operations other than twisting, covering or wrapping, and not elsewhere classified.

(1) Note. With the exception of coating or impregnating, the other operations are usually precedent or concomitant with the twisting operation. Twisting operations combined with subsequent operations are usually classified with the final operation. See the Search Notes below.

SEE OR SEARCH CLASS:

87, Textiles: Braiding, Netting, and Lace Making, for combinations of covering a core by twisting followed by braiding,

156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclasses 51+ for processes for covering indefinite length endless conductors.

7 This subclass is indented under subclass 6. Devices including means to apply a fluid or plastic material to the wrapping, the core, and/or to the completed article.

SEE OR SEARCH THIS CLASS, SUBCLASS:

32, 295+ for comparison with this subclass (7).

SEE OR SEARCH CLASS:

118, Coating Apparatus, appropriate subclasses for coating apparatus, per se, and see Treatment of Textiles or Leather in the class definition for the line between Class 118 and the textile classes.

8 This subclass is indented under subclass 6. Devices having means for incorporating pulverulent material into the twisted strand. For example, this subclass includes incorporation of gunpowder as in fuse making.

SEE OR SEARCH CLASS:
86, Ammunition and Explosive-Charge Making, subclass 1 for fuse-making in general.

9 This subclass is indented under subclass 6. Devices provided with means to preform or shape the wire or strand before the covering or wrapping operation. This operation is usually for the purpose of preventing backtwist or to cause even laying of the strands about the core.

SEE OR SEARCH THIS CLASS, SUBCLASS:
311, for twisting devices other than for covering or wrapping, combined with strand preforming or shaping.

10 This subclass is indented under subclass 3. Apparatus wherein the supply of covering strands is revolved about the core and moved longitudinally thereof during the covering operation.

SEE OR SEARCH CLASS:
242, Winding, Tensioning, or Guiding, subclasses 439+ for forming a composite article by winding material from an orbital material supply onto a core.

11 This subclass is indented under subclass 3. Apparatus wherein the core is rotated bodily to wind the covering strand thereon. Either the supply for the covering strand may be moved longitudinally of the core or the core may have an additional longitudinal movement.

SEE OR SEARCH CLASS:
242, Winding, Tensioning, or Guiding, subclasses 443+ for forming a composite article by winding material onto a rotating core.

12 This subclass is indented under subclass 3. Apparatus wherein means is provided in addition to the covering or wrapping means to twist the core concomitantly with the covering thereof, or to twist the completed strand, including the core, following or simultaneously with the application of the covering.

SEE OR SEARCH THIS CLASS, SUBCLASS:
60, 61, 66+, for twisting couples, per se.

13 This subclass is indented under subclass 3. Apparatus for wrapping a plurality of strands about a core.

14 This subclass is indented under subclass 13. Apparatus provided with means for cabling or doubling the wrapped strands.

SEE OR SEARCH THIS CLASS, SUBCLASS:
242, Winding, Tensioning, or Guiding, subclasses 472.8+, for comparison with this subclass (14).

15 This subclass is indented under subclass 13. Apparatus wherein the strands are applied to the core in successive layers.

16 This subclass is indented under subclass 15. Apparatus wherein the wrapping material is fed from supply reels or bobbins which are mounted for rotation coaxially of the core.

17 This subclass is indented under subclass 13. Apparatus where in the wrapping material is fed from supply reels or bobbins which are mounted for rotation coaxially of the core.

SEE OR SEARCH THIS CLASS, SUBCLASS:
16, for further search.

18 This subclass is indented under subclass 3. Apparatus wherein the wrapping material is fed from supply reels or bobbins which are mounted for rotation coaxially of the core.

SEE OR SEARCH THIS CLASS, SUBCLASS:
16, 17, for further search .

19 This subclass is indented under subclass 3. Apparatus provided with mechanism for starting or stopping, either automatically or manually controlled.

(1) Note. Stop mechanisms generally applicable to this class will be found elsewhere. See the search notes below.

SEE OR SEARCH THIS CLASS, SUBCLASS:

78+, for stop mechanisms generally applicable to this class .

20 Means for making waxed ends for sewing, limited for the most part to expedients for tapering the ends.

21 Means for forming endless bands, grommets and the like by a twisting or twining operation.

SEE OR SEARCH CLASS:

140, Wireworking, subclass 88 for comparison with this subclass (21).

242, Winding, Tensioning, or Guiding, subclasses 434+ for comparison with this subclass (21).

22 Devices for joining or uniting threads, cords, ropes, etc., by a twisting or twining operation.

SEE OR SEARCH CLASS:

156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclass 49 for splicing of indefinite length conductors.

23 Implements used in connection with splicing, such as those used to separate the strands of a rope or cable to facilitate the splicing operation.

(1) Note. For needles of general application, see search notes below.

(2) Note. For hand implements employed in knot tying operations, see search notes below.

SEE OR SEARCH CLASS:

223, Apparel Apparatus, subclasses 102+ for needles of general application

269, Work Holders, subclass 103 for patents to a device for holding cable about a thimble (rigger's vise).

289, Knots and Knot Tying, subclass 17, for hand implements employed in knot tying operations.

403, Joints and Connections, subclasses 206+ for a joint of general application involving a curved or bent rod, subclass 275 for a joint involving a stranded rod wherein the rod is deformed by an element inserted between the strands and subclass 291 for a joint involving a flexible member in general.

24 Means for forming strands, usually ornamental, by twisting two or more strands or filaments together to bind in numerous short transverse threads or filaments.

25 Apparatus for twisting determinate lengths of strands by rotating one or both ends.

SEE OR SEARCH THIS CLASS, SUBCLASS:

20, for apparatus for making waxed ends.

SEE OR SEARCH CLASS:

140, Wireworking, subclass 149 for comparison with this subclass (25).

26 This subclass is indented under subclass 25. Devices having means for doubling the strands after the initial twist is made to permit the reverse twist.

27 This subclass is indented under subclass 26. Devices having also devices inserted between the doubled strands to hold back the reverse twist as it is made and insure an even laying thereof.

28 Apparatus for twisting hair, grass, and the like to form yarn or cordage therefrom.

SEE OR SEARCH THIS CLASS, SUBCLASS:

4, for apparatus for feeding and wrapping such materials.

SEE OR SEARCH CLASS:

56, Harvesters, subclass 460, 461, and 462 for straw band forming devices combined with harvester mechanisms.

112, Sewing, subclass 23, for sewing machines for making straw braid.

29 This subclass is indented under subclass 28. Apparatus having means to insert additional hard twist to cause the strand to curl or coil about its longitudinal axis.

30 This subclass is indented under subclass 28. Apparatus having means for feeding individual hairs, stalks of straw or the like successively to a machine for forming them into a yarn.

SEE OR SEARCH THIS CLASS, SUBCLASS:

90+, for feeding mechanisms generally applicable to twisting devices within this class.

31 Devices for twisting paper or paper-like material, such as synthetic tape, asbestos paper, etc., in ribbon form with or without the addition of fibrous material to form yarns or cords therefrom.

32 This subclass is indented under subclass 31. Devices having additional means for applying fluid or plastic material to the paper or paper-like material, concomitantly with the twisting operation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

295+, for machines for twisting or twining materials in general, combined with coating or impregnating.

33 Apparatus for forming hollow ropes or strands by twisting or twining operations. These machines usually involve twisting or twining of strands upon a hollow mandrel.

58.3 This subclass is indented under subclass 1. Means for twining or twisting together two or more strands, in which strands from a plurality of sources of supply extend to a closing point with the strand from at least one such source being revolved (as by a flyer) about at least one other such supply source before being intertwisted or intertwined with the remaining strand or strands.

(1) Note. In a typical structure of this type, most of the strand supply sources are mounted substantially co-axially within an elongated cradle, tube, cage, or flyer, and the strands are led to points away from the axis of such structure (to clear other supply sources) and thence along the structure toward a closing point which is beyond the confines of the flyer but located on the axis thereof. The revolution, about the remaining packages, of the strand(s) to be twisted is like the revolution of the rope about the jumper in rope skipping.

(2) Note. The component strands are laid together in adjacent helical convolutions, with or without twisting of the individual strands forming such convolutions. Such individual component twisting depends upon the revolution of the individual supply source, from which the component strand emanates, about an axis substantially parallel to that of the unwinding strand.

(3) Note. The devices of this subclass are distinguished from those of subclass 58.49 in that here a strand does not necessarily pass in a loop about its own supply. Multiple twisters, however, may be found as subcombinations of the apparatus of this and indented subclasses.

58.32 This subclass is indented under subclass 58.3. Devices for maintaining a desired rate of rotation of the supply source carrier or cradle relative to a fixed point (such as the machine frame).

58.34 This subclass is indented under subclass 58.3. Means including a support for a spool-carrying cradle which comprises a part of the joint structure for assembling two sections of a built-up tube or flyer, or which comprises a tube or flyer supporting and/or driving disc.

58.36 This subclass is indented under subclass 58.3. Apparatus wherein means are provided for guiding strands along the strand revolving structure (e.g., tube or flyer) in the direction of the closing point.

(1) Note. The guiding means herein classified are exclusive of the means for guiding the strands from the tube frame or flyer to the closing point for which see the search notes below.

SEE OR SEARCH THIS CLASS, SUBCLASS:

353+, for strand guiding means of more general utility in twisting apparatus.

361, for guiding strands from the tube frame or flyer to the closing point.

58.38 This subclass is indented under subclass 58.36. Devices including means for rotating the guiding means about its own axis, which axis is substantially parallel to the axis of the strand revolving structure.

(1) Note. Such guides usually function to control torsion in the strands to be intertwined while they are being led toward the closing point.

58.49 This subclass is indented under subclass 1. Devices in which a loop or balloon of strand material being twisted is revolved about its own supply or take-up package.

(1) Note. Two twists are produced for each revolution of a single loop about its package. Further twist may be added (or subtracted) by the introduction of an additional loop of the strand revolving about its package in the sense opposite to (or the same as) that of the first loop. For patents disclosing such plural co-axial loops, see subclass 58.61 indented hereunder.

(2) Note. These devices differ from the devices in subclass 58.3 in that the latter must include at least one strand loop revolving about the package of another strand. Unitary multiple twist devices, of the type found in this and indented subclasses, may constitute a subcombination of a skip type strander; see, for example patent 2,499,245 to Harmon, in subclass 58.32 above.

(3) Note. Either the supply package or the take-up package, or both, may be rotated or revolved to produce an additional or subtractive twist.

SEE OR SEARCH THIS CLASS, SUBCLASS:

60+, for means for imparting both a delivery twist and a receiving twist to a strand or strands.

58.52 This subclass is indented under subclass 58.49. Apparatus comprising a multiple twist device which is additionally effective to strand, ply, or intertwine two or more strands, or the combination of a multiple twist device with stranding, plying, or intertwining means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

14, 63 and 64, for intertwining or intertwisting means not necessarily associated with a unitary multiple twist device.

58.54 This subclass is indented under subclass 58.52. Means provided with two or more complete unitary multiple twist units operating on strands to be stranded or laid together.

(1) Note. A multiple twist unit is composed of a strand package and means to revolve at least one loop of the strand about such package.

58.55 This subclass is indented under subclass 58.54. Devices in which strands supplied by a plurality of multiple twist units are stranded or laid by a succeeding multiple twist unit.

58.57 This subclass is indented under subclass 58.52. Apparatus comprising a multiple twist device which is additionally effective to impart false twist to a strand being twisted, or the combination of a multiple twist device with associated false twisting means.

(1) Note. Means to prevent twist occurring at the normal or usual twisting point, and causing it to appear later, are properly classified in this subclass; see, for example, patent 1,907,551 to Kraft, which appears as a cross reference in this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

58.59, for multiple twisters combined with false twisters and not associated with stranding or laying means; and see the Notes thereto.

58.59 This subclass is indented under subclass 58.4. Devices comprising a multiple twist device which is additionally effective to impart false twist to a strand being twisted, or the combination of a multiple twist device with associated false twisting means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

58.57, for false twisters combined with stranding, doubling or intertwining unitary multiple twist apparatus.

328+, for false twisters combined with drafting means.

332+, for false twist devices, per se.

58.61 This subclass is indented under subclass 58.49. Devices in which two or more loops or balloons of the same strand are revolved coaxially about the strand package.

58.63 This subclass is indented under subclass 58.49. Means including synchronously rotated loop-forming flyer members whose centers of rotation are located, one on either side of the strand package, at axially spaced points on the path of travel of the strand.

(1) Note. For inclusion in this subclass, the invention must relate to plural flyers individually driven. Patents directed to plural connected flyers, only one of which is driven, are classified according to characteristics other than the multipart nature of the strand revolving means.

58.65 This subclass is indented under subclass 58.49. Apparatus in which the package about which the loop is revolved, is the take-up package.

58.67 This subclass is indented under subclass 58.65. Means in which the strand winding guide is revolved about the package, or the package is reciprocated to provide relative traverse of the strand in winding.

SEE OR SEARCH CLASS:

242, Winding, Tensioning, or Guiding, subclasses 484+ for a traverse mechanism for shifting a material take-up guide and 474.6 for a winding device having a material guide that revolves around a take-up.

58.68 This subclass is indented under subclass 58.65. Apparatus in which the winding bobbin or reel is driven, through slippable means, by the flyer drive, thus incorporating a flexible drive which is responsive to the varying load demands of the package and strand.

SEE OR SEARCH CLASS:

192, Clutches and Power-Stop Control, subclasses 54.1+ for torque responsive clutches, per se.

464, Rotary Shafts, Gudgeons, Housings, and Flexible Couplings for Rotary Shafts, subclasses 30+ for slip couplings, per se.

58.7 This subclass is indented under subclass 58.49. Devices having means for positively feeding the strands to, through, or from the multiple twist device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

90+, for strand feeding means combined with twisting means generally; and see the Notes thereto.

58.72 This subclass is indented under subclass 58.49. Apparatus having means for controlling motion of the package, carrier or support.

(1) Note. The control may be exerted, for instance, to keep the package stationary or to revolve or rotate it for additional twisting.

58.74 This subclass is indented under subclass 58.72. Means in which the control over the package is exercised to prevent or reduce vibration of the package or its support.

(1) Note. Control means which operate only to diminish the amplitude of oscillation of the package holder about its mounting

axis are not considered to be vibration dampers for this subclass.

58.76 This subclass is indented under subclass 58.72. Devices in which at least one magnetic field of force extends between the package or package carrier structure and another part of the device and operates to control the motion of the package.

58.78 This subclass is indented under subclass 58.72. Apparatus wherein a train of gearing extends from the package or package carrier structure to another part of the device and operates to control motion of such package.

(1) Note. The gearing often is of the planetary type.

SEE OR SEARCH CLASS:
74, Machine Element or Mechanism, subclasses 640+ for mechanical movements based on gearing.

58.79 This subclass is indented under subclass 58.78. Means in which the gearing is of the friction type.

SEE OR SEARCH CLASS:
476, Friction Gear Transmission Systems or Components, for frictional gear transmissions.

58.81 This subclass is indented under subclass 58.72. Devices in which the package or package carrier is provided with means which, being acted upon by gravity, operates to maintain the carrier stationary; or in which the package or its carrier is so configurated or so inclined that the weight thereof tends to prevent motion of the carrier.

SEE OR SEARCH THIS CLASS, SUBCLASS:
58.74, for package control means effective to prevent vibration of the package other than that represented by oscillation about its mounting axis.

58.83 This subclass is indented under subclass 58.49. Apparatus provided with means for guiding, guarding, or controlling a strand in its passage to, through, or from the multiple twist device.

SEE OR SEARCH THIS CLASS, SUBCLASS:
115, for flyer elements (which, of necessity, must include some strand guiding means).
352+, for strand guiding or guarding means not associated with a multiple twist device.

58.84 This subclass is indented under subclass 58.83. Means in which the strand is controlled by winding on a drum or pulley co-axial with the flyer.

(1) Note. The strand winds and unwinds in response to variations in tension in the loop, thus providing “storage in transit” for a variable amount of running strand material.

58.86 This subclass is indented under subclass 58.83. Apparatus provided with means to control the tension on the strands being operated upon.

(1) Note. Many of the tension devices found in this subclass are adapted to function additionally as twist controllers or barriers.

SEE OR SEARCH THIS CLASS, SUBCLASS:
328+, for twist controlling means combined with drafting and false twisting devices.

SEE OR SEARCH CLASS:
242, Winding, Tensioning, or Guiding, subclasses 410+ and 147+ for a tension control or brake with winding, unwinding, or in general use.

59 Devices in which a strand or strands are twisted by rotation of the source of supply of material to be twisted relative to the axis of the strand being formed.

SEE OR SEARCH THIS CLASS, SUBCLASS:
3+, for delivery twist devices employed in covering or wrapping strands spirally about a core..

60 This subclass is indented under subclass 59. Devices combined with a twisting couple for giving additional twist and winding the finished product.

(1) Note. These are strictly multiple twist devices, but it is to be noted that in subclasses 58.49+ the twisting device is unitary and the one twisting couple inserts the plural twist.

(2) Note. Combinations of receiving twist and delivery twist are included here even though the delivery twist is only for the purpose of taking out the twist of unwinding.

SEE OR SEARCH THIS CLASS, SUBCLASS:

12, for twisting couples combined with covering or wrapping apparatus.

66+, for twisting couples.

61 This subclass is indented under subclass 60. Devices including means automatically or manually operated for stopping or starting both the supply and twisting couple.

(1) Note. For devices for stopping or starting covering or wrapping apparatus, see this class, subclass 19.

(2) Note. For devices for stopping or starting the supply alone or the couple alone, see this class, subclasses 78+.

62 This subclass is indented under subclass 59. Devices including a winding mechanism for winding the twisted material.

(1) Note. Search also this class, subclasses 60 and 61.

63 This subclass is indented under subclass 62. Devices having means for twisting individual groups of two or more strand elements and concomitantly, by continued operation of the machine, twisting said groups together and winding them upon a receiver.

(1) Note. Compare with this class, subclass 14.

64 This subclass is indented under subclass 59. Devices having means for twisting individual groups of two or more strand elements and concomitantly, by continued operation of the machine twisting said groups together.

(1) Note. Search also this class, subclass 63.

(2) Note. Compare with this class, subclass 14.

65 This subclass is indented under subclass 59. Devices wherein the strand supplying devices in addition to being revolved about the axis of the twisted structure, have a rotation relative to the strands fed therefrom.

(1) Note. Search also this class, subclasses 14, 63 and 64.

66 Devices in which the winding or receiving element for the strand or filamentary material is rotated or revolved to accomplish the twisting and winding. Twisting couples are classified here and in the subclasses indented hereunder.

(1) Note. For twisting couples combined with covering or wrapping apparatus, see this class, subclass 12.

(2) Note. For multiple receiving twist devices, see this class, subclasses 58.49+.

(3) Note. For twisting couples combined with delivery twist devices, see this class, subclasses 60 and 61.

66.5 This subclass is indented under subclass 66. Apparatus in which the twist is imparted to the strand by the rotation of a cradle carrying the strand receiving package.

67 This subclass is indented under subclass 66. Receiving twist devices having thread guiding means mounted for rotation about an axis usually coincident with the axis of a strand receiver or holder.

(1) Note. For unitary devices of this type for producing a multiple twist with each rotation, see this class, subclasses 58.49+.

68 This subclass is indented under subclass 67. Devices wherein the twisting and winding means includes a windlass to feed the twisted material.

70 This subclass is indented under subclass 67. Devices wherein the strand receiver is rotated by the pull of the material being twisted and wound. Usually some friction means is provided to retard and govern the rotation of the receiver.

(1) Note. Compare this class, subclass 72.

71 This subclass is indented under subclass 67. Coaxially arranged twisting couples having means for traversing either a guide for the twisted strand or the receiver upon which the twisted strand is being wound.

(1) Note. Search also this class, subclasses 68, 69 and 70.

(2) Note. See this class, subclass 99, for traversing of driven elements.

SEE OR SEARCH CLASS:
242, Winding, Tensioning, or Guiding, subclasses 478.3+ for a ring rail traverse mechanism in a helical winding device.

72 This subclass is indented under subclass 66. Devices wherein the strand receiver is rotated by the pull of the material being twisted and wound. Usually some friction means is provided to retard and govern and rotation of the receiver.

(1) Note. Search also this class, subclass 70.

73 This subclass is indented under subclass 66. Twisting couples in which the tip of the bobbin or spindle is constructed to assist in the twisting operation.

74 This subclass is indented under subclass 66. Receiving twist type apparatus having a stationary strand twisting and laying device cooperating with the strand receiver. The stationary device is usually cup-shaped and is provided with a bearing or raceway for the strand portion which slips around the receiver.

(1) Note. For caps, per se, see this class, subclass 127.

75 This subclass is indented under subclass 66. Twisting couples in which one element of the couple comprises a ring and its traveler.

(1) Note. For rings and travelers as elemental subcombinations see this class, subclasses 119+.

76 Receiving twist devices comprising buckets, pots, etc., known in the trade as “spinning pots” or “spinning buckets,” usually employed for collecting freshly formed artificial filaments. This subclass includes also the funnels or guides for depositing or guiding the filaments to the interior of the pot.

SEE OR SEARCH CLASS:
425, Plastic Article or Earthenware Shaping or Treating: Apparatus, subclasses 67+ for the combination of a filament forming means and a “spinning pot”.

77 This subclass is indented under subclass 76. Devices provided with means for rotating the pots. This subclass includes electric drives especially designed for rotating the pot, and also means to reciprocate the guide and/or the pot. Couplings when embodied as a part of or a modification of the drive and the pot are also included.

(1) Note. Other drives are in this class, subclasses 92+.

(3) Note. Couplings, per se, are in Class 403, Joints and Connections.

SEE OR SEARCH CLASS:
210, Liquid Purification or Separation, subclasses 360.1+ for centrifugal extractors, some of which have driving mechanisms.

78 Spinning or twisting machines provided with means either manually or automatically operated to facilitate the stopping and/or starting thereof.

(1) Note. For covering or wrapping machines combined with stopping or starting devices, see this class, subclass 19.

(2) Note. For starting and stopping devices for mule type spinning machines, see this class, subclasses 320+.

(3) Note. For delivery twist devices combined with twisting couples and provided with means to stop or start both the supply and the twisting couple, see this class, subclass 61.

(4) Note. For other textile machines equipped with starting and stopping means or for starting and stopping means of general application.

SEE OR SEARCH CLASS:

19, Textiles: Fiber Preparation, subclasses .2+.
28, Textiles: Manufacturing, subclasses 186+.
66, Textiles: Knitting, subclasses 157+.
87, Textiles: Braiding, Netting, and Lace Making, subclasses 18+.
139, Textiles: Weaving, subclasses 336+.
192, Clutches and Power-Stop Control, subclasses 125+.
242, Winding, Tensioning, or Guiding, subclasses 472.9+, 484.9+, 479.9+ and 484.8 for a helical winding device having controls responsive to material condition or the state of a winding operation including controls for stopping and starting the winding device.

79 This subclass is indented under subclass 78. Devices wherein the traverse or movement of an element of a twisting couple during winding of strand material controls the stopping, under predetermined conditions, usually when sufficient material is wound on the receiver. Such devices may be associated with the ring rail, the bobbin rail, or the builder motion, or an element moving synchronously therewith.

(1) Note. For traversing driving mechanism without stopping and starting, see this class, subclass 99.

80 This subclass is indented under subclass 78. Devices wherein the condition of the strand or material being operated on controls the stopping, as by failure, exhaustions, too much or too little tension, undue accumulations, etc.

(1) Note. Search also Class 66, Textiles: Knitting, subclasses 158+.

81 This subclass is indented under subclass 80. Devices in which electrical energy is utilized to operate the stop mechanism, the strand detector or responsive device usually operating to close or open an electric control circuit.

SEE OR SEARCH CLASS:

66, Textiles: Knitting, subclass 161 and the classes referred to in the notes thereto.
200, Electricity: Circuit Makers and Breakers, subclasses 61.13+ for electrical switches which are controlled by threads or strands; see subclass 61.14 where the switch is controlled by a knot or change in diameter of the thread or strand, and subclass 61.18 where the switch is controlled by the slack, breakage, run-out or failure to travel along its intended path.

82 This subclass is indented under subclass 80. Devices which stop an individual twisting couple, together with its associated feeding means.

(1) Note. Search also this class, subclass 61.

83 This subclass is indented under subclass 80. Devices wherein the feeding means only is rendered inoperative or ineffective.

(1) Note. Search also this class, subclasses 82 and 326.

SEE OR SEARCH CLASS:

226, Advancing Material of Indeterminate Length, subclasses 10+ for material-responsive control of web or strand feed means.

84 This subclass is indented under subclass 83. Devices in which one feed roll of a pair is separated from its driving roll to render the feeding action inoperative.

85 This subclass is indented under subclass 83. Devices wherein the strand or strands being fed are laterally moved with respect to the bite of the feeding rolls to effect stopping and starting.

86 This subclass is indented under subclass 83. Devices acting upon failure of one or more strands to sever or part the unbroken strands to thereby stop the feed.

(1) Note. Search also Classes 66, Textiles: Knitting, subclass 159.

SEE OR SEARCH CLASS:
242, Winding Tensioning, or Guiding, subclass 487.3 for a helical winding device having means for severing a strand responsive to detection of a defect in it.

87 This subclass is indented under subclass 86. Devices in which the strands are gripped in advance of the feed means to cause them to be parted by the continued operation of the feed.

(1) Note. Compare this class, subclass 353.

88 This subclass is indented under subclass 78. Devices having means to facilitate the stopping of a single spindle.

SEE OR SEARCH THIS CLASS, SUBCLASS:
61,
89, Devices under subclass 88 provided with means to move a spindle laterally toward and away from its driving means to effect stopping and starting.

90 Rotary devices or means for positively moving or conducting strand or filamentary material to or through a twisting or spinning machine.

(1) Note. For means for feeding hair, grass or the like to twisting machines, see this class, subclass 30.

(2) Note. Feeding devices in the form of capstans mounted within twisting fliers are in this class, subclass 68.

(3) Note. For feeding means stopping, see this class, subclasses 78+, particularly subclasses 83+.

SEE OR SEARCH CLASS:
226, Advancing Material of Indeterminate Length appropriate subclasses for methods of, and apparatus for, feeding material without utilizing the leading or trailing ends to effect movement of the material.

91 This subclass is indented under subclass 90. Devices having means to feed a strand or one or more of a plurality of strands variably or intermittently to produce slubs, nubs or other variations in the twisted product.

SEE OR SEARCH THIS CLASS, SUBCLASS:
317+,

92 Means for driving, spinning, twisting or twining machines or parts thereof, not elsewhere classifiable.

(1) Note. This subclass and those indented hereunder do not include driving means for spinning mules, for which see this class, subclasses 320+.

(2) Note. For driving means for spinning, twisting or twining machine wherein the novelty resides in stopping or starting mechanism, see this class, subclasses 19, 61 and 78+.

(3) Note. For centrifugal spinning pots equipped with driving connections, see this class, subclass 77.

SEE OR SEARCH CLASS:
242, Winding Tensioning, or Guiding, subclasses 487.1+ for a drive for a helical winding device.

93 This subclass is indented under subclass 92. Driving devices provided with means to adjust or vary the speed at which the machines or parts thereof operate.

(1) Note. For strand feeding means having speed variation for irregular feeding, see this class, subclass 91.

94 This subclass is indented under subclass 93. Driving devices wherein the speed of the machine or part thereof is constantly and continuously varied during one complete cycle of its operation.

(1) Note. The driving device may provide a short interval wherein the speed is at a constant maximum.

(2) Note. For strand feeding means having cyclical speed variation for irregular feeding, see this class, subclass 91.

95 This subclass is indented under subclass 94. Driving devices having means providing for additional variation of the speed of the machine or part thereof during each traverse of a traversing element of the twisting couple. These devices may be operated from the builder motion.

(1) Note. For driving means having traverse controlled speed variation not superposed upon a constant variation, see this class, subclass 98.

96 This subclass is indented under subclass 94. Driving devices of the fly or roving frame type having means to control or regulate the relative speed of the fliers and cooperating spools or other receivers, both fliers and receivers being positively driven.

97 This subclass is indented under subclass 93. Driving devices having means to vary the speed of one or more pairs of drawing rollers to control the twist and keep it uniform.

98 This subclass is indented under subclass 93. Driving devices provided with means for positively varying the speed during each cycle of operation of the traversing element of the twisting couple. This operation may be effected by the builder motion.

(1) Note. For traverse-controlled devices for controlling the slippage of a belt or of friction surfaces, see this class, subclass 92.

(2) Note. For similar speed adjustment superposed upon a constant speed variation, see this class, subclass 95.

SEE OR SEARCH CLASS:
242, Winding Tensioning, or Guiding, subclasses 478.8+ for varying a characteristic of ring rail traverse during operation.

99 This subclass is indented under subclass 92. Driving devices arranged to drive the traversing mechanism or to facilitate traversing movement of a driving element for a twisting couple to cause proper distribution of the strand material on a receiver. This must be more than a mere splined shaft device.

SEE OR SEARCH THIS CLASS, SUBCLASS:
71, and 75.

SEE OR SEARCH CLASS:
242, Winding Tensioning, or Guiding, subclasses 476.7+ for a traverse mechanism for a helical winding device.

100 This subclass is indented under subclass 92. Driving devices including an electric motor.

SEE OR SEARCH THIS CLASS, SUBCLASS:
77, for electric motors driving centrifugal pots or spinning buckets.

SEE OR SEARCH CLASS:
310, Electrical Generator or Motor Structure, appropriate subclasses for electrical motor structure.
318, Electricity: Motive Power Systems, appropriate subclasses, for electric motor control systems.

101 This subclass is indented under subclass 92. Driving devices including a rotary fluid-impact or reaction type motor.

SEE OR SEARCH CLASS:
415, Rotary Kinetic Fluid Motors or Pumps, appropriate subclasses for a rotary fluid-impact or reaction type motor, per se.

102 This subclass is indented under subclass 92. Driving devices including gear wheels or arrangements thereof.

(1) Note. For gearing, per se, see Class 74, Machine Element or Mechanism, 475, Planetary Gear Transmission Systems or Components, appropriate subclasses.

103 This subclass is indented under subclass 102. Driving devices in which friction gear wheels are used.

SEE OR SEARCH CLASS:
476, Friction Gear Transmission Systems or Components, for friction gearing, per se.

104 This subclass is indented under subclass 92. Driving devices wherein endless bands or belts are used for the transmission of power.

(1) Note. For belt drives, per se, see Class 474, Endless Belt Power Transmission Systems or Components.

105 This subclass is indented under subclass 104. Driving devices provided with means automatically to tension the driving bands.

SEE OR SEARCH CLASS:
474, Endless Belt Power Transmission Systems or Components, particularly subclasses 101+ for means for adjusting belt tension in an endless belt power transmission.

112 Devices forming parts of spinning or twisting machines, not otherwise classifiable.

113 This subclass is indented under subclass 112. Devices provided with friction or other devices to control the speed of a nondriven element of a twisting couple.

SEE OR SEARCH THIS CLASS, SUBCLASS:
70, and 72.

114 Devices to engage or grip the strands to limit the distance that the twist may extend back from the twisting couple. These devices are usually shown and claimed in combination with condensing or polishing heads.

SEE OR SEARCH THIS CLASS, SUBCLASS:
30,

115 This subclass is indented under subclass 112. Strand twisting or laying devices having thread guiding means and mounted for rotation about an axis usually coincident with the axis of the strand, bobbin or spool.

(1) Note. For fliers provided with means to facilitate doffing or donning, see this class, subclasses 276+.

(2) Note. Fliers of the rope machine type, sometimes called “rotating cradles”, will be found in this class, subclasses 60, 61 and 66-75. Fliers in combination are also found in these subclasses.

116 This subclass is indented under subclass 115. Fliers usually associated with delivery twist bobbins, in machines such as silk throwing machines, to facilitate the unwinding and twisting operations.

(1) Note. Devices of this type not associated with twisting devices will be found in Class 242, Winding, Tensioning, or Guiding, subclass 128.

117 This subclass is indented under subclass 115. Fliers having means urged against the wound mass for compacting and assisting in the even laying of the strand.

118 This subclass is indented under subclass 115. Fliers comprising a ring or annulus mounted for rotation in a raceway and carrying a fixed strand guide.

(1) Note. For elements similarly arranged but carrying no thread guides, see this class, subclass 112.

(2) Note. For similar elements employed as part of a drag device, see this class, subclass 113.

(3) Note. For rotating rings for travelers, see this class, subclass 124.

119 This subclass is indented under subclass 112. Devices comprising stationary annular raceways for a sliding guide used in twisting strand material. The sliding guide or traveler is moved along the raceway or ring by the pull of the strand being twisted and wound. Travelers in combination with the rings are included.

(1) Note. For receiving twist spinning organizations of ring and traveler type, see this class, subclass 75.

120 This subclass is indented under subclass 119. Devices provided with means to supply lubricant to the ring and/or the traveler. This subclass does not include patents disclosing the conventional lubrication wherein lubricant is manually smeared on the traveler contacting surface of the ring at intervals, but does include means which are inherently self lubricating.

(1) Note. Lubrication systems for ring groups are in Class 184, Lubrication, subclass 6 and indented subclasses.

121 This subclass is indented under subclass 119. Rings and travelers provided with devices to guide or protect the strand or the traveler in its motion.

(1) Note. For separators of general application in twisting machines, see this class, subclasses 354+.

122 This subclass is indented under subclass 119. Rings and travelers provided with means to support, retain or adjust the ring.

123 This subclass is indented under subclass 122. Rings and travelers wherein the traveler is of the bar type, that is, the traveler comprises a bar which is positioned as a chord with respect to the ring with which it cooperates.

(1) Note. For bar type travelers, per se, see this class, subclass 126.

124 This subclass is indented under subclass 122. Devices wherein the ring is mounted for rotation about the axis of the strand receiver.

(1) Note. For ring and raceway fliers, see this class, subclass 118.

125 The sliding guides per se used in ring spinning or twisting and adapted to be used on spinning or twisting rings to twist and lay a strand on a cop tube, spool, or other strand receiver.

(1) Note. Where the sliding guide, per se, is recited solely in terms of the composition or stock that makes up the article, the sliding guide is classifiable in the appropriate composition or stock class. Sliding guides defined solely by plastic compositions are classified in Class 106, Compositions: Coating or Plastic, appropriate subclass, except if the composition includes a synthetic resin or a natural rubber in which case the article will be classified in Class 520, Synthetic Resins or Natural Rubbers. If the sliding guide is recited solely in terms of stock material, it will be classified in Class 428, Stock Material or Miscellaneous Articles, subclasses 544+ for stock material which is all metal or has adjacent metal components.

126 This subclass is indented under subclass 125. Travelers comprising a bar which is normally arranged as a chord with respect to the ring with which it cooperates.

SEE OR SEARCH THIS CLASS, SUBCLASS:

123, for combinations of ring and bar type traveler.

127 Stationary strand twisting and laying devices usually cup-shaped and cooperating with a strand receiver having a bearing or raceway for the strand upon which it slips around the receiver.

(1) Note. For receiving twist type organizations of cap type, see this class, subclass 74.

127.5 This subclass is indented under subclass 112. Apparatus for mounting supply packages in position for delivering strand material therefrom.

(1) Note. Such devices may comprise a bobbin or spool supporting cradle of the type employed in stranding machines.

SEE OR SEARCH THIS CLASS, SUBCLASS:
69, for bobbin or spool supports embodied in receiving twist fliers.

SEE OR SEARCH CLASS:
242, Winding, Tensioning, or Guiding, subclasses 130+ and 134+ for bobbin or spool supports, per se.

127.7 This subclass is indented under subclass 127.5. Means for supporting a bobbin or spool and adjustable to compensate for strand packages of different sizes or for wear of the contacting parts or to facilitate assembly.

129 Elements especially adapted to cooperate with strand twisting and laying devices to receive the thread in the form of a cop or thread package. These elements include spindles, bobbins, etc., and combinations thereof not elsewhere provided for.

(1) Note. For centrifugal spinning pots, per se, see this class, subclasses 76 and 77.

SEE OR SEARCH THIS CLASS, SUBCLASS:
60, 61 and 66, and indented subclasses, for combinations including receiving elements.

SEE OR SEARCH CLASS:
242, Winding, Tensioning, or Guiding, 118 and indented subclasses for spindles and bobbins of general application.
384, Bearings, subclasses 227+ for plain bearing structure and 603 for antifriction bearing structure for spinning spindles.

130 This subclass is indented under subclass 129. Elements combined with a driving pulley. This pulley is known under many names, as whirl, whorl, wharle, wharve, etc.

(1) Note. For spindle tip type whirl driven receiving elements, see this class, subclass 73.

131 This subclass is indented under subclass 130. Elements adapted to engage and hold the strand during doffing, starting or other operations. These devices are primarily intended to insure proper starting of the strand on its receiver.

(1) Note. For other means for facilitating doffing or donning, see this class, subclasses 276+.

132 This subclass is indented under subclass 130. Elements provided with means to prevent accidental removal of a spindle from its socket during removal of a bobbin or spool therefrom.

(1) Note. Compare with this class, subclass 131.

SEE OR SEARCH THIS CLASS, SUBCLASS:
80, and 89.

133 This subclass is indented under subclass 130. Elements provided with means for applying or conducting lubricant to the bearings of a spindle.

SEE OR SEARCH CLASS:
384, Bearings, subclass 241 for lubricating a bearing structure for a spindle.

134 This subclass is indented under subclass 133. Elements in which the spindle rotates within a bearing usually of the type known as a bolster.

(1) Note. For live spindle receiving elements without lubricating features, see this class, subclass 135.

135 This subclass is indented under subclass 130. Elements in which the spindle rotates in a bearing usually called a bolster.

(1) Note. For live spindle receiving elements with lubrication features, see this class, subclass 134.

SEE OR SEARCH CLASS:
384, Bearings, subclass 239 for a bolster type bearing for a spindle.

136 Horizontal bars, constituting parts of spinning or twisting machines, adapted to support a plurality of twisting couples or elements thereof. Bushings, centering and adjusting means for the rails are here included.

137 This subclass is indented under subclass 136. Rails especially adapted to support the ring and traveler twisting elements, including mountings, bushings, centering and/or adjusting means for the rails.

(1) Note. Supports for individual rings are in this class, subclasses 122+.

138 Elements usually forming parts of cordage, rope or cable machines for compressing, guiding, and shaping strands during laying into a cord, rope or cable.

(1) Note. For dies and mandrels combined with nippers, see this class, subclass 114.

(2) Note. For other strand guiding and guarding devices, see this class, subclasses 352+.

(3) Note. For metal bending mandrels, see Class 72, Metal Deforming, various subclasses, and particularly subclasses 64+, 66, 127+, and 476+.

(4) Note. For metal drawing dies and mandrels, see Class 72, Metal Deforming, subclasses 274+ and 462+.

(5) Note. For burnishing wire, cord, and other strands, see Class 29, Metal Working, subclasses 90.01+ and 90.5.

200 STRAND STRUCTURE:
This subclass is indented under the class definition. Subject matter comprising indefinite length twisted structures made by the machines or process falling within this class and not elsewhere provided for.

(1) Note. To be placed in this subclass, there must be a claimed twisted or twined constituent in the strand. Certain terms, such as plied, doubled, twined, roving, spun staple fiber yarn, etc., are accepted as denoting a twisted strand, and if used in a claim, classification in Class 57 is indicated, provided all other requirements therefore are met and provided that the disclosure of the patent does not clearly define the product as one devoid of strand structure (e.g., twisted, covered, and/or wrapped) as provided by this class.

(2) Note. A web or sheet product, distinguished only by the twisted, covered, and/or wrapped strand employed in its manufacture, is included in this subclass and the indented subclasses.

(3) Note. Search the appropriate subclasses of this class for processes and apparatus for making twisted strand structures.

SEE OR SEARCH CLASS:
14, Bridges, subclass 22 for suspension bridge cables.
28, Textiles: Manufacturing, appropriate subclasses for processes and apparatus for treating textile strand structures.
87, Textiles: Braiding, Netting, and Lace Making, subclasses 1 through 13 for braided strand structures.
104, Railways, subclass 240 for railway traction cable construction.
128, Surgery, subclass 335.5 for strand structures used as sutures or ligatures.
139, Textiles: Weaving, subclasses 420+ for materials peculiarly adapted for weaving textiles.
152, Resilient Tires and Wheels, subclass 451 for cord reinforcement material used in pneumatic tires in areas other than belt, breaker or carcass; subclasses 556, 557 and 558+ for arrangement of carcass reinforcing cords; and subclass 562 for cords used in beads.

174, Electricity: Conductors and Insulators, subclasses 68.1+ for conductor strand structures.

182, Fire Escape, Ladder, or Scaffold, subclasses 189+ for a single strand peculiarly adapted for use as a fire escape device.

256, Fences, subclass 46 for a fence strand structure.

277, Seal for a Joint or Juncture, for a generic sealing means or process, subclass 537 for a dynamic, circumferential contact seal for other than a piston contained or compressed by a gland in a packing box having braided, woven, or twisted material or construction.

427, Coating Processes, appropriate subclasses for processes of coating strand structures.

428, Stock Material or Miscellaneous Articles, subclasses 98+ and 221+ for web or sheet product including some defined structure other than or in addition to the structure of the constituent strands, per se; and subclasses 364+ for coated or structurally defined fiber, strand, or filament. See the main definition of Class 428, section VI, C (2, a) for the line between Class 428 and Class 57.

431, Combustion, subclass 325 for coated, impregnated layered, coupled, or reinforced burner wick.

201 Endless bands:

This subclass is indented under subclass 200. Subject matter wherein the twisted structure is formed into an endless band and is usually used as a driving band.

SEE OR SEARCH THIS CLASS, SUBCLASS:

21, for process and apparatus for making endless bands.

SEE OR SEARCH CLASS:

152, Resilient Tires and Wheels, subclasses 539+ for tire beads.

245, Wire Fabrics and Structure, subclass 1.5 for tire bead grommets.

474, Endless Belt Power Transmission in Systems or Components, particularly subclasses 237+ for a friction drive belt for a power transmission.

202 Splices:

This subclass is indented under subclass 200. Subject matter wherein two ends are joined together to form a splice solely by a twisting or twining operation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

22+, for processes and apparatus for making a splice.

SEE OR SEARCH CLASS:

403, Joints and Connections, subclass 275 and 291 for a joint involving a stranded rod or a flexible member in general.

203 Chenille:

This subclass is indented under subclass 200. Subject matter comprising ornamental strands formed by twisting two or more strands together to bind in numerous transverse threads or thread filaments.

SEE OR SEARCH THIS CLASS, SUBCLASS:

24, for process and apparatus for making a chenille strand.

SEE OR SEARCH CLASS:

28, Textiles: Manufacturing, subclass 144 for chenille fabrication or treatment.

139, Textiles: Weaving, subclass 395 for woven chenille strands.

204 Alternately twisted:

This subclass is indented under subclass 200. Subject matter wherein succeeding portions of the strand unit in the longitudinal direction are oppositely twisted; these are also known as S-Z twisted strands.

SEE OR SEARCH THIS CLASS, SUBCLASS:

293, for process and apparatus for making alternately twisted strands.

205 Crimped or bulked type:
This subclass is indented under subclass 204. Subject matter wherein the alternately twisted strand is comprised of filamentary or fibrous material, each filament or fiber of which has been transversely deformed or distended into a nonlinear configuration of coils, loops, crinkles, etc.

SEE OR SEARCH THIS CLASS, SUBCLASS:
208, 226, 227, 239, 245, 246, and 254, for other twisted strand structures having crimped or bulked components therein.
282+, for manufacturing twist crimped yarns.
351, for other types of crimping or texturing combined with a twisting operation.

SEE OR SEARCH CLASS:
28, Textiles: Manufacturing, subclasses 247+ for crimping or texturing strands by operations other than twist crimping.
264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclass 168 for extrusion of filaments combined with crimping. 428, Stock Material or Miscellaneous Articles, subclasses 369+ and 373+ for crimped fibers and filaments.

206 Longitudinal variation:
This subclass is indented under subclass 200. Subject matter wherein the diameter of the strand is nonuniform along the longitudinal axis of the strand.

(1) Note. These strands are commonly known as novelty yarns, effect yarns, thick and thin yarns, slub yarns, etc., and are deliberately produced for a special effect.

SEE OR SEARCH THIS CLASS, SUBCLASS:
91, for feeding strands to a twisting operation at a variable rate.
317, for producing longitudinal variations in strands by means of a variable drafting operation combined with a twisting operation.

SEE OR SEARCH CLASS:
19, Textiles: Fiber Preparation, subclasses 237+ for drafting at longitudinally varying rates.
28, Textiles: Manufacturing, subclass 243 for producing variable denier in strands in a stretching operation.
264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclass 167 for imparting longitudinal irregularities to filaments during extrusion.
428, Stock Material or Miscellaneous Articles, subclass 399 for fibers and filaments with longitudinal varying cross sections.

207 Covered or wrapped type:
This subclass is indented under subclass 206. Subject matter wherein the longitudinal variation is effected by a discontinuous or irregular covering or wrapping about a core.

SEE OR SEARCH THIS CLASS, SUBCLASS:
3+, for making covered or wrapped strands.
210+, for strand structures having a spirally wrapped or covered core component.

208 Crimped or bulked type:
This subclass is indented under subclass 206. Subject matter wherein the longitudinal variation is effected by a discontinuous varying, or irregular amount of crimp, bulkiness, loopiness, etc., along the longitudinal axis of the strand.

SEE OR SEARCH THIS CLASS, SUBCLASS:
205, 226, 227+, 239, 245+, and 254, for other twisted strand structures having crimped or bulked components therein.
282+, for manufacturing twist crimped yarns.
351, for other types of crimping or texturing combined with a twisting operation.

SEE OR SEARCH CLASS:

28, Textiles: Manufacturing, subclasses 247+ for crimping or texturing strands by operations other than twist crimping; and subclasses 252+ for producing discontinuous or irregular crimps.

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclass 168 for extrusion of filaments combined with crimping.

428, Stock Material or Miscellaneous Articles, subclasses 369+ and 373+ for crimped fibers and filaments.

209 Slub type:

This subclass is indented under subclass 206. Subject matter wherein the longitudinal variation is effected by the presence of additional fibrous material introduced intermittently along the length of the strand and in the form of knots, beads, lumps, etc.

210 Covered or wrapped:

This subclass is indented under subclass 200. Subject matter wherein the strand structure is formed by winding fibrous, filamentous, or strand material spirally about a core.

SEE OR SEARCH THIS CLASS, SUBCLASS:

3+, for processes and apparatus for making covered or wrapped strands.

SEE OR SEARCH CLASS:

59, Chain, Staple, and Horseshoe Making, subclass 92 for wrapped or twisted chain links.

174, Electricity: Conductors and Insulators, subclasses 68.1+ and 137+ for twisted strands having elements imparting conductive or insulative qualities to the strand.

464, Rotary Shafts, Gudgeons, Housings, and Flexible Couplings for Rotary Shafts, subclasses 51+ for a flexible coupling or a shaft which may include twisted strands.

211 Plied:

This subclass is indented under subclass 210. Subject matter wherein two or more covered or wrapped strands are twisted together or about each other to form a plied twisted structure.

SEE OR SEARCH THIS CLASS, SUBCLASS:

236+, for other plied strand structures.

212 Wire wrapped:

This subclass is indented under subclass 210. Subject matter wherein wire strands are wrapped about a core.

213 Plural wire wrapped layers:

This subclass is indented under subclass 212. Subject matter wherein there is a plurality of successive wire wrapped layers about the core.

SEE OR SEARCH THIS CLASS, SUBCLASS:

15+, for covering or wrapping operations for making strands with plural wrapped layers.

230, for other covered or wrapped strands having a plurality of wrapped layers.

214 Stranded layers:

This subclass is indented under subclass 213. Subject matter wherein the individual component of each layer is a stranded structure made of a plurality of elements.

SEE OR SEARCH THIS CLASS, SUBCLASS:

13+, for covering or wrapping operations for making strands with a stranded wrapping layer.

218+, and 231, for other covered or wrapped strands having a stranded wrapping layer.

215 Including nonround cross sections:

This subclass is indented under subclass 213. Subject matter wherein the individual components of the covered or wrapped strand structure or the strand structure as a whole have a cross section other than round.

SEE OR SEARCH THIS CLASS, SUBCLASS:

201, 248, and 253, for other strand structures with components having particular cross sections.

SEE OR SEARCH CLASS:

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclass 177 for extrusion of filaments having particular cross section.

428, Stock Material or Miscellaneous Articles, subclasses 397+ for fibers or filaments of particular cross sections.

216 With core other than wire:

This subclass is indented under subclass 213. Subject matter wherein strands other than wire are used to form the core.

217 Coated or impregnated:

This subclass is indented under subclass 213. Subject matter wherein the covered or wrapped strands are coated or impregnated with a liquid or plastic material.

SEE OR SEARCH THIS CLASS, SUBCLASS:

7, 32, 286, 292, and 295+, for coating or impregnating combined with a twisting or covering or wrapping operation.

221, 223, 232+, 241+, 250+, 257, and 258+, for other twisted, covered, or wrapped strands having a coating applied thereto.

SEE OR SEARCH CLASS:

428, Stock Material or Miscellaneous Articles, subclass 361 and 375+ for fiber or filaments having a coating thereon.

218 Stranded wire-wrapped layer:

This subclass is indented under subclass 212. Subject matter wherein the wire is wrapped as a layer about the core and each component of the layer is a stranded structure made of a plurality of wire elements.

SEE OR SEARCH THIS CLASS, SUBCLASS:

13+, for processes and apparatus for making strands with a stranded wrapping layer.

214, and 231, for other covered or wrapped strands having a stranded wrapping layer.

219 Including nonround cross section:

This subclass is indented under subclass 218. Subject matter wherein the individual components of the covered or wrapped strand structure or the strand structure as a whole have a cross section other than round.

SEE OR SEARCH THIS CLASS, SUBCLASS:

215, 248 and 253, for other strand structures having components with particular cross sections.

SEE OR SEARCH CLASS:

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclass 177 for extrusion of filaments having a particular cross section.

428, Stock Material or Miscellaneous Articles, subclasses 397+ for fibers or filaments of a particular cross section.

220 With core other than wire:

This subclass is indented under subclass 218. Subject matter wherein strands other than wire are used to form the core.

221 Coated or impregnated:

This subclass is indented under subclass 218. Subject matter wherein the covered or wrapped strands are coated or impregnated with a liquid or plastic material.

SEE OR SEARCH THIS CLASS, SUBCLASS:

7, 32, 286, 292, and 295+, for coating or impregnating combined with a twisting or covering or wrapping operation.

217, 223, 232+, 241+, 250+, 257, and 258+, for other twisted, covered, or wrapped strands having a coating applied thereto.

SEE OR SEARCH CLASS:

428, Stock Material or Miscellaneous Articles, subclass 361 and 375+ for fibers or filaments having a coating thereon.

222 With core other than wire:

This subclass is indented under subclass 212. Subject matter wherein strands other than wire are used to form the core.

SEE OR SEARCH THIS CLASS, SUBCLASS:

7, 32, 286, 292, and 295+, for coating or impregnating combined with a twisting or covering or wrapping operation.

217, 221, 232+, 241+, 250+, 257, and 258, for other twisted, covered, or wrapped strands having a coating applied thereto.

SEE OR SEARCH CLASS:

428, Stock Material or Miscellaneous Articles, subclass 361 and 375+ for fibers or filaments having a coating thereon.

223 Coated or impregnated:

This subclass is indented under subclass 212. Subject matter wherein the covered or wrapped strands are coated or impregnated with a liquid or plastic material.

224 Discrete fiber wrap:

This subclass is indented under subclass 210. Subject matter wherein individual, loosely associated, untwisted, or substantially untwisted fibers form the spiral wrap for the core.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5, for processes and apparatus for applying loose fibers spirally about a core.

225 Elastomeric material core:

This subclass is indented under subclass 210. Subject matter wherein the core is composed of elastomeric material such as rubber or spandex.

226 With crimped or bulked material:

This subclass is indented under subclass 225. Subject matter wherein the covered or wrapped strand having a core of elastomeric material includes filamentous or fibrous material which has been transversely deformed or distended into a nonlinear configuration of coils, crinkles, loops, crimps, etc.

SEE OR SEARCH THIS CLASS, SUBCLASS:

205, 208, 227+, 239, 245, 246+, and 254, for other twisted strand structures having crimped or bulked components therein.

282+, for processes and apparatus for manufacturing twist crimped yarns.

351, for other types of crimping or texturing combined with a twisting operation.

SEE OR SEARCH CLASS:

28, Textiles: Manufacturing, subclasses 247+ for crimping or texturing operations other than twist crimping.

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclass 168 for extrusion of filaments combined with crimping.

428, Stock Material or Miscellaneous Articles, subclasses 369+ and 373+ for crimped fibers and filaments.

227 Including crimped or bulked material:

This subclass is indented under subclass 210. Subject matter wherein the covered or wrapped strand includes filamentous or fibrous material which has been transversely deformed or distended into a nonlinear configuration of coils, crinkles, loops, crimps, etc.

SEE OR SEARCH THIS CLASS, SUBCLASS:

205, 208, 226, 239, 245, 246+, and 254, for other twisted strand structures having crimped or bulked components therein.

282, for processes and apparatus for manufacturing twist crimped yarns.

351, for other types of crimping or texturing combined with a twisting operation.

SEE OR SEARCH CLASS:

28, Textiles: Manufacturing, subclasses 247+ for crimping or texturing operations other than twist crimping.

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclass 168 for extrusion of filaments combined with crimping.

428, Stock Material or Miscellaneous Articles, subclasses 369+ and 373+ for crimped fibers and filaments.

228 **Crimped or bulked core:**
This subclass is indented under subclass 227. Subject matter wherein the core is composed of filamentous or fibrous material which has been transversely deformed or distended into a non-linear configuration of coils, crinkles, loops, crimps, etc.

229 **Including glass material:**
This subclass is indented under subclass 210. Subject matter wherein the covered or wrapped strand contains filamentous or fibrous material composed of glass.

SEE OR SEARCH THIS CLASS, SUBCLASS:
240, and 249, for other twisted strand structures including glass.

SEE OR SEARCH CLASS:
65, Glass Manufacturing, subclasses 376+ for processes of manufacturing glass fibers, filaments, or preforms, especially subclass 444 for glass wrapping or covering.
428, Stock Material or Miscellaneous Articles, subclasses 364+ for structurally defined glass fiber or filament.
442, Fabric (Woven, Knitted, or Non-woven Textile or Cloth, etc.), subclass 180, 262, 266, 331, 348, 355, and 367 for fabric-containing glass components.

230 **Plural wrapped layers:**
This subclass is indented under subclass 210. Subject matter wherein there is a plurality of successive wrapped layers about the core.

SEE OR SEARCH THIS CLASS, SUBCLASS:
15+, for processes and apparatus for making strands with a plurality of wrapped layers.
213+, for other covered or wrapped strands having a plurality of wrapped layers.

231 **Stranded layer:**
This subclass is indented under subclass 210. Subject matter wherein each component of the spirally wrapped layer is a stranded structure made of a plurality of strand elements.

SEE OR SEARCH THIS CLASS, SUBCLASS:
13+, for covering or wrapping operations for making strands with a stranded wrapping layer.
214, and 218+, for other covered or wrapped strands having a stranded wrapping layer.

232 **Coated or impregnated:**
This subclass is indented under subclass 210. Subject matter wherein the covered or wrapped strand is coated or impregnated with a liquid or plastic material.

SEE OR SEARCH THIS CLASS, SUBCLASS:
7, 32, 286, 292, and 295+, for coating or impregnating combined with a twisting or covering or wrapping operation.
217, 221, 223, 241, 250, 257, and 258+, for other twisted, covered, or wrapped strands having a coating applied thereto.

SEE OR SEARCH CLASS:
428, Stock Material or Miscellaneous Articles, subclass 361 and 375+ for fibers or filaments having a coating thereon.

233 **Web material:**
This subclass is indented under subclass 232. Subject matter wherein the covered or wrapped strand is made wholly or in part of natural or synthetic paperlike or tapelike material in ribbon form.

SEE OR SEARCH THIS CLASS, SUBCLASS:
31+, for process and apparatus for making twisted strands from web material.
235, 259, and 260, for other twisted strands having web material components therein.

234 **Adhesively bonded:**
This subclass is indented under subclass 232. Subject matter wherein the covered or wrapped strand is coated or impregnated with a material such that the strand material bonds or adheres together in a unitary structure.

SEE OR SEARCH THIS CLASS, SUBCLASS:

242, and 251, for other adhesively bonded twisted strand

297, for process and apparatus for forming adhesively bonded strands combined with a twisting operation.

SEE OR SEARCH CLASS:

156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclasses 51+ for making a conductor of indefinite length combined with adhesive bonding; and subclasses 148+ for adhesive bonding with a broadly recited textile operation.

235 Web material:

This subclass is indented under subclass 210. Subject matter wherein the covered or wrapped strand is made wholly or in part of natural or synthetic paperlike or tapelike material in ribbon form.

SEE OR SEARCH THIS CLASS, SUBCLASS:

31+, for process and apparatus for making twisted strands from web material.

233, 259 and 260, for other twisted strands having web material components therein.

236 Plied:

This subclass is indented under subclass 200. Subject matter composed of two or more individual strand units twisted about each other.

(1) Note. The individual strand unit may be a yarn or other strand structure which is usually itself twisted prior to being plied and the structure thereof can be discerned in the plied structure. However, a multifilament strand which is twisted would not be considered a plied strand for this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

211, for plied strands in which the plied components are covered or wrapped strands.

237 Cabled or cord type (i.e., plied plies):

This subclass is indented under subclass 236. Subject matter composed of two or more plied yarns twisted about each other.

238 Composite:

This subclass is indented under subclass 236. Subject matter wherein the plied strand is composed of two or more different materials.

239 Crimped or bulked:

This subclass is indented under subclass 238. Subject matter wherein at least one of the components of the plied strand structure includes filamentous or fibrous material which has been transversely deformed or distended into a nonlinear configuration of coils, crinkles, loops, crimps, etc.

SEE OR SEARCH THIS CLASS, SUBCLASS:

205, 208, 226, 227+, 245, 246, and 254, for other twisted strand structures having crimped or bulked components therein.

282+, for making twist crimped yarns. 351, for other type crimping or texturing combined with a twisting device.

SEE OR SEARCH CLASS:

28, Textiles: Manufacturing, subclasses 247+ for crimping or texturing strands by operations other than twist crimping.

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclass 168 for extrusion of filaments combined with crimping.

428, Stock Material or Miscellaneous Articles, subclasses 369+ and 373+ for crimped fibers or filaments.

240 Glass material:

This subclass is indented under subclass 236. Subject matter wherein the plied strand structure includes glass material in filamentous or fibrous form.

SEE OR SEARCH THIS CLASS, SUBCLASS:

229, and 249, for other twisted strand structures including glass.

SEE OR SEARCH CLASS:

65, Glass Manufacturing, subclasses 376+ for processes of manufacturing glass fibers, filaments, or preforms, especially subclass 438 for producing twisted or textured glass fibers.

428, Stock Material or Miscellaneous Articles, subclasses 364+ for structurally defined glass fiber or filament.

442, Fabric (Woven, Knitted, or Nonwoven Textile or Cloth, etc.), subclass 180, 262, 266, 331, 348, 355, and 367 for fabric-containing glass components.

241 Coated or impregnated:

This subclass is indented under subclass 236. Subject matter wherein the plied strand is coated or impregnated with a liquid or plastic material.

SEE OR SEARCH THIS CLASS, SUBCLASS:

7, 32, 286, 292, and 295+, for coating or impregnating combined with a twisting or covering or wrapping operation.

SEE OR SEARCH CLASS:

428, Stock Material or Miscellaneous Articles, subclass 361 and 375+ for fibers or filaments having a coating thereon.

242 Adhesively bonded:

This subclass is indented under subclass 241. Subject matter wherein the plied strand is coated or impregnated with a material such that the strand material bonds or adheres together in a unitary structure.

SEE OR SEARCH THIS CLASS, SUBCLASS:

234, and 251, for other adhesively bonded twisted strands.

297, for process and apparatus for forming adhesively bonded strands combined with a twisting operation.

SEE OR SEARCH CLASS:

156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclasses 51+ for making a conductor of indefinite length combined with adhesive bonding; and subclasses 148+ for adhesive bonding with a broadly recited textile operation.

243 Multifilament yarns:

This subclass is indented under subclass 200. Subject matter wherein the strand is composed of a plurality of continuous filaments twisted together.

244 Composite:

This subclass is indented under subclass 243. Subject matter wherein the multifilament yarn is composed of two or more different materials.

245 Crimped or bulked:

This subclass is indented under subclass 244. Subject matter wherein the composite multifilament yarn includes filamentous or fibrous material which has been transversely deformed or distended into a nonlinear configuration of coils, crinkles, loops, crimps, etc.

SEE OR SEARCH THIS CLASS, SUBCLASS:

205, 208, 226, 227, 239, 246+, and 254, for other twisted strand structures having crimped or bulked components therein.

282+, for processes and apparatus for manufacturing twist crimped yarns.

351, for other types of crimping or texturing combined with a twisting operation.

SEE OR SEARCH CLASS:

28, Textiles: Manufacturing, subclasses 247+ for crimping or texturing operations other than twist crimping.

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclass 168 for extrusion of filaments combined with crimping.

428, Stock Material or Miscellaneous Articles, subclasses 369+ and 373+ for crimped fibers and filaments.

246 Crimped or bulked:

This subclass is indented under subclass 243. Subject matter wherein the multifilament yarn includes filamentous or fibrous material which has been transversely deformed or distended into a nonlinear configuration of coils, crinkles, loops, crimps, etc.

SEE OR SEARCH THIS CLASS, SUBCLASS:

205, 208, 226, 227, 239, 245, and 254, for other twisted strand structures having crimped or bulked components therein.

282+, for processes and apparatus for manufacturing twist crimped yarns.

351, for other types of crimping or texturing combined with a twisting operation.

SEE OR SEARCH CLASS:

28, Textiles: Manufacturing, subclasses 247+ for crimping or texturing operations other than twist crimping.

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclass 168 for extrusion of filaments combined with crimping.

428, Stock Material or Miscellaneous Articles, subclasses 369+ and 373+ for crimped fibers and filaments.

247 Twist crimped type:

This subclass is indented under subclass 246. Subject matter wherein the crimp is the type which was effected by a twisting and setting operation, e.g., a false twist crimping operation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

282+, for processes and apparatus for manufacturing twist crimped yarns.

248 Particular cross section:

This subclass is indented under subclass 243. Subject matter wherein the multifilament yarn includes filamentous or fibrous material which is of a cross section other than solid round, such as elliptical, multilobal, hollow, cruciform, etc.

SEE OR SEARCH THIS CLASS, SUBCLASS:

215, 219, and 253, for other strand structures having components with particular cross sections.

SEE OR SEARCH CLASS:

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclass 177 for extrusion of filaments having a particular cross section.

428, Stock Material or Miscellaneous Articles, subclasses 397+ for fibers or filaments of a particular cross section.

249 Glass material:

This subclass is indented under subclass 243. Subject matter wherein the multifilament yarn includes glass material in filamentous form.

SEE OR SEARCH THIS CLASS, SUBCLASS:

229, and 240, for other twisted strand structures including glass.

SEE OR SEARCH CLASS:

65, Glass Manufacturing, subclasses 376+ for processes of manufacturing glass fibers, filaments, or preforms, especially subclass 438 for producing twisted glass fibers.

428, Stock Material or Miscellaneous Articles, subclasses 364+ for structurally defined glass fiber or filament.

442, Fabric (Woven, Knitted, or Nonwoven Textile or Cloth, etc.), subclass 180, 262, 266, 331, 348, 355, and 367 for fabric-containing glass components.

250 Coated or impregnated:

This subclass is indented under subclass 243. Subject matter wherein the multifilament yarn is coated or impregnated with a liquid or plastic material.

SEE OR SEARCH THIS CLASS, SUBCLASS:

7, 32, 286, 292, and 295, for coating or impregnating combined with a twisting or covering or wrapping operation.

217, 221, 223, 232+, 241+, 257, and 258+, for other twisted, covered, or wrapped strands having a coating applied thereto.

SEE OR SEARCH CLASS:

428, Stock Material or Miscellaneous Articles, subclass 361 and 375+ for fibers or filaments having a coating thereon.

251 Adhesively bonded:

This subclass is indented under subclass 250. Subject matter wherein multifilament yarn is coated or impregnated with a material such that the yarn is bonded or adhered together in a unitary structure.

SEE OR SEARCH THIS CLASS, SUBCLASS:

234, and 242, for other adhesively bonded twisted strands.

297, for process and apparatus for forming adhesively bonded strands combined with a twisting operation.

SEE OR SEARCH CLASS:

156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclasses 51+ for making a conductor of indefinite length combined with adhesive bonding; and subclasses 148+ for adhesive bonding with a broadly recited textile operation.

252 Staple fiber blends:

This subclass is indented under subclass 200. Subject matter wherein the twisted strand is formed of staple length fibers of two or more different materials distributed throughout the length of the strand.

(1) Note. The fibers of the different materials are usually distributed homogeneously throughout the strand in any proportion.

SEE OR SEARCH THIS CLASS, SUBCLASS:

2, for process and apparatus for stapilizing filaments combined with a twisting operation.

238+, and 244, for other yarn structures made from more than one material.

SEE OR SEARCH CLASS:

19, Textiles: Fiber Preparation, subclasses .3+ for process and apparatus for stapilizing continuous filaments.

428, Stock Material or Miscellaneous Articles, subclasses 359+ for staple fibers or masses thereof.

253 Particular cross sections:

This subclass is indented under subclass 252. Subject matter wherein at least one of the fibers in the strand is of a cross section other than solid round, such as elliptical, multilobal, hollow, cruciform, etc.

SEE OR SEARCH THIS CLASS, SUBCLASS:

215, 219 and 248, for other strand structures having components with particular cross sections.

SEE OR SEARCH CLASS:

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclasses 177.1+ for extrusion of filaments having a particular cross section.

428, Stock Material or Miscellaneous Articles, subclasses 397+ for fibers or filaments of a particular cross section.

254 Crimped or bulked fibers:

This subclass is indented under subclass 252. Subject matter wherein at least one of the fibers in the strand is transversely deformed or distended into a nonlinear configuration of coils, crinkles, loops, crimps, etc.

SEE OR SEARCH THIS CLASS, SUBCLASS:

205, 208, 226, 227, 239, 245, and 246+, for other twisted strand structures having crimped or bulked components therein.

282+, for processes and apparatus for manufacturing twist crimped yarns.

351, for other types of crimping or texturing combined with a twisting operation.

SEE OR SEARCH CLASS:

28, Textiles: Manufacturing, subclasses 247+ for crimping or texturing operations other than twist crimping.

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclass 168 for extrusion of filaments combined with crimping.

428, Stock Material or Miscellaneous Articles, subclasses 369+ and 373+ for crimped fibers and filaments.

255 Synthetic material:
This subclass is indented under subclass 252. Subject matter wherein the strand includes staple fibers made of synthetic materials, such as nylon, polyester, etc.

256 With natural fibers:
This subclass is indented under subclass 255. Subject matter wherein the strand includes staple fibers of both synthetic and natural materials.

257 Coated:
This subclass is indented under subclass 252. Subject matter wherein the strand is coated or impregnated with a liquid or plastic material.

SEE OR SEARCH THIS CLASS, SUBCLASS:
7, 32, 286, 292, and 295+, for coating or impregnating combined with a twisting or covering or wrapping operation.
217, 221, 223, 232, 241+, 250+, and 258+, for other twisted, covered, or wrapped strands having a coating applied thereto.

SEE OR SEARCH CLASS:
428, Stock Material or Miscellaneous Articles, subclass 361 and 375+ for fibers or filaments having a coating thereon.

258 Coated or impregnated:
This subclass is indented under subclass 200. Subject matter wherein the strand is coated or impregnated with a liquid or plastic material.

SEE OR SEARCH THIS CLASS, SUBCLASS:
7, 32, 286, 292, and 295+, for coating or impregnating combined with a twisting or covering or wrapping operation.
217, 221, 223, 232+, 241+, 250+, and 257, for other twisted, covered, or wrapped strands having a coating applied thereto.

SEE OR SEARCH CLASS:
428, Stock Material or Miscellaneous Articles, subclass 361 and 375+ for fibers or filaments having a coating thereon.

259 Web material:
This subclass is indented under subclass 258. Subject matter wherein the strand is made wholly or in part of natural or synthetic paperlike or tapelike material in ribbon form.

SEE OR SEARCH THIS CLASS, SUBCLASS:
31+, for process and apparatus for making twisted strands from web material.
233, 235 and 260, for other twisted strands having web material components therein.

260 Web material:
This subclass is indented under subclass 200. Subject matter wherein the strand is made wholly or in part of natural or synthetic paperlike or tapelike material in ribbon form.

SEE OR SEARCH THIS CLASS, SUBCLASS:
31+, for process and apparatus for making twisted strands from web material.
233, 235 and 259, for other twisted strands having web material components therein.

261 Piecing up:
This subclass is indented under subclass 1. Subject matter wherein strand ends which have become broken, separated, or severed during the twisting operation are joined together on the twisting device so that the twisting operation may be resumed.

SEE OR SEARCH THIS CLASS, SUBCLASS:
78, for spinning or twisting machines provided with means to facilitate the stopping and/or starting thereof.

SEE OR SEARCH CLASS:
139, Textiles: Weaving, subclass 452 for forming predetermined or reserve weft lengths on a loom in a weaving operation.

262 **With traveler threading:**
This subclass is indented under subclass 261. Subject matter wherein the piecing up includes manipulating the strand through the guide or traveler element in a ring and traveler type twister.

263 **On open-end machine:**
This subclass is indented under subclass 261. Subject matter wherein the piecing up is effected in a twister of the type wherein a strand is rotated about its axis while the free-end or "tail" is in contact with, or in proximity to, a source of supply of loose fiberlike material.

SEE OR SEARCH THIS CLASS, SUBCLASS:
58.89+, for free-end or open-end type spinning machines, per se.

264 **Monitor and control:**
This subclass is indented under subclass 1. Subject matter wherein the functions of the twisting operations are continuously or periodically checked or surveyed and are compensated or changed in response to variations detected during such check or survey to maintain the twisting operation within pre-established or acceptable ranges or norms.

SEE OR SEARCH THIS CLASS, SUBCLASS:
92+, for means for driving spinning, twisting, or twining machines or parts thereof.

SEE OR SEARCH CLASS:
226, Advancing Material of Indeterminate Length, subclasses 10+ for material responsive control means.
340, Communications: Electrical, subclass 259 for systems automatically responsive to conditions of a web, sheet, or work feed.

265 **Monitor and record:**
This subclass is indented under subclass 1. Subject matter wherein the functions of the twisting operation are continuously or periodically checked or surveyed and variations of the twisting functions from pre-established or acceptable ranges or norms are noted or indicated.

SEE OR SEARCH CLASS:
73, Measuring and Testing, subclasses 159+ for measuring properties of yarns or filaments.
324, Electricity: Measuring and Testing, subclasses 658+ and 691+ to determine nonelectrical property of a material by means of its capacitance, resistance, or conductivity.

266 **Doffing or donning:**
This subclass is indented under subclass 1. Subject matter wherein filled or partly filled packages or bobbins of yarn or strand are positively removed and/or replaced with empty ones at the work station.

SEE OR SEARCH CLASS:
242, Winding, Tensioning, or Guiding, subclasses 473.4+ for winding machines provided with package doffing means.

267 **On cap or roving frame:**
This subclass is indented under subclass 266. Subject matter wherein the doffing and/or donning is effected on a cap-type or flier-type twister.

SEE OR SEARCH THIS CLASS, SUBCLASS:
67+, and 74, for roving or cap twisting devices, per se.

268 **Carriage:**
This subclass is indented under subclass 266. Subject matter including doffing or donning mechanism having means adapted to move along the machine frame and to manipulate the bobbins or packages individually or as a group.

269 **With strand manipulation:**
This subclass is indented under subclass 268. Subject matter wherein the yarn or strand at the twisting station being doffed or donned is subjected to preliminary or subsequent handling or manipulation other than or in addition to the doffing or donning operation.

270 Bobbin or package manipulation:
This subclass is indented under subclass 268. Subject matter wherein the bobbin or package being doffed or donned is subjected to preliminary or subsequent handling or manipulation other than or in addition to the doffing or donning operation.

SEE OR SEARCH THIS CLASS, SUBCLASS:
281, for moving or transferring strand packages between, to, or from twisting stations.

SEE OR SEARCH CLASS:
221, Article Dispensing, appropriate subclasses for manipulation of articles in a dispensing operation.

271 Successive and individual type:
This subclass is indented under subclass 268. Subject matter wherein the carriage usually moves continuously along the frame and the package or bobbins are doffed or donned one at a time.

272 Ejector type:
This subclass is indented under subclass 271. Subject matter including means to doff the bobbin or package by a sudden and relatively large force to propel the bobbin or package from its receiver, usually in a vertical direction.

273 Bottom lifting:
This subclass is indented under subclass 266. Subject matter wherein the doffing operation is effected by engaging the package to be doffed beneath the lower end of the bobbin and lifting or sliding the package vertically off the work station (e.g., spindle).

274 Over end of bobbin:
This subclass is indented under subclass 266. Subject matter wherein the doffing operation is effected by engaging the package from above the upper end of the bobbin and lifting or sliding the package vertically off the work station (e.g., spindle).

275 Bobbin graspers:
This subclass is indented under subclass 266. Subject matter including means to engage the filled or empty bobbin to grip, grasp, or hold it during the doffing or donning operation.

SEE OR SEARCH CLASS:
294, Handling: Hand and Hoist-Line Implements, subclasses 86.4+ for article grippers, per se.

276 With preparation for doffing- or donning-type operation:
This subclass is indented under subclass 1. Subject matter including an operation which is performed prior to doffing or donning for the purpose of facilitating the removal of filled bobbins or packages and/or the replacement thereof with empty ones.

SEE OR SEARCH THIS CLASS, SUBCLASS:
131, for whorl driven receiving elements combined with yarn holding means to facilitate doffing.
360, for lifting devices for raising thread boards away from the spindle tips to facilitate doffing.

277 Rail positioning:
This subclass is indented under subclass 276. Subject matter wherein the preparation includes locating the traversing rail, usually the ring rail, in such a position that doffing or donning can be effected.

(1) Note. The line between this subclass and Class 242 for this subject matter is as follows: If the traverse or builder motion is claimed or if the resetting of the rail is claimed, then the original patent is placed in Class 242.

SEE OR SEARCH CLASS:
242, Winding, Tensioning, or Guiding, subclasses 478.3+ for manipulation of the ring rail during a winding operation.

278 Strand manipulation:
This subclass is indented under subclass 276. Subject matter wherein the preparation includes engaging or manipulating the strand at

the twisting station being doffed or donned so that the doffing or donning operation can be effected.

279 Threading up:
This subclass is indented under subclass 1. Subject matter wherein the strand to be twisted is directed or guided to or through the twisting station during or prior to the initial start-up of the twisting operation or in preparation for the initiation of the twisting operation.

SEE OR SEARCH CLASS:
28, Textiles: Manufacturing, subclass 268 for threading of a stuffer box texturing device; and subclass 272 for threading or stringing up a fluid jet texturing device.
226, Advancing Material of Indeterminate Length, may include a nominal recitation of a supply or take-up coil (e.g., less than a support for such a coil or a cooperative relationship between a tension or exhaust detector and reel driving or reel stopping means, etc.), subclass 7 for a process of and subclasses 97.1+ for apparatus using fluid current to advance the material.

280 On false twist type machines:
This subclass is indented under subclass 279. Subject matter wherein the threading up is effected on a twisting machine employing a false twister.

SEE OR SEARCH THIS CLASS, SUBCLASS:
284+, for false twist type crimping operations.
328+, for drafting operations employing false twist devices.
332+, for false twist devices, per se.

281 Package handling:
This subclass is indented under subclass 1. Subject matter including the moving or transferring of strand material in package form between, to, or from spinning stations.

SEE OR SEARCH THIS CLASS, SUBCLASS:
90+, for positively moving or conducting strand material to or through a twisting operation.
270+, for bobbin or package manipulation during a doffing or donning operation.

SEE OR SEARCH CLASS:
19, Textiles: Fiber Preparation, subclass 159 for handling slivers in coiling cans.
414, Material or Article Handling, appropriate subclasses for systems of moving or handling articles in general.

282 Twist setting:
This subclass is indented under subclass 1. Subject matter wherein the strand, while it is in a twisted state, is subjected to a treatment, the purpose of which is to impart a relatively permanent torque to the strand so that the strand will assume and maintain a creped, textured, or crimped configuration.

SEE OR SEARCH THIS CLASS, SUBCLASS:
205, 208, 226, 227+, 239, 246+, and 254, for twisted strands having a crimp therein.
308, for twisting operations wherein the temperature, humidity, ventilation, etc., of the atmosphere or environment around the twisting operation is controlled.
309, for twisting operations wherein the strand is subjected to a post or after treatment to develop or enhance the final product.
351, for twisting operations combined with other types of crimping operations.

SEE OR SEARCH CLASS:
28, Textiles: Manufacturing, subclasses 247+ for other types of crimping or texturing operations.
264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclass 168 for extrusion of filaments combined with crimping.

283 With twist variation:
This subclass is indented under subclass 282. Subject matter wherein the twist is imparted or set in a nonuniform manner so that the degree of crepe, texture, or crimp will vary longitudinally of the strand.

SEE OR SEARCH THIS CLASS, SUBCLASS:

91, for irregular feeding of a strand in a twisting operation.

205, for alternately twisted strands having a crimp therein.

208, for twisted strands having a crimp therein and also having a longitudinal variation along the axis thereof.

317+, for imparting a variable draft combined with a twisting operation to a strand.

284 False twist crimp:

This subclass is indented under subclass 282. Subject matter wherein the twist that is set is imparted to the strand by a false twist operation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

280, for threading up of false twist type operations.

328+, for drafting combined with false twist operations.

332+, for false twisters, per se.

285 Intertwine type:

This subclass is indented under subclass 284. Subject matter wherein the false twist is effected by two or more running strand portions twisting about one another over a confined length and the twist is set in this configuration.

286 With coating or impregnation:

This subclass is indented under subclass 284. Apparatus or process including the application of a liquid or plastic treatment to the strand.

SEE OR SEARCH THIS CLASS, SUBCLASS:

7, 32 and 295+, for coating or impregnating combined with other twisting or covering or wrapping operations.

292, for coating or impregnating used in a twist-setting operation.

287 With stretching:

This subclass is indented under subclass 284. Subject matter including elongating the strand before, during, or after the false twist crimping operation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

310, for other twisting operations combined with stretching.

SEE OR SEARCH CLASS:

28, Textiles: Manufacturing, subclasses 240+ for modifying a running strand length by means of a stretching apparatus.

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclasses 288.4+ for processes of stretching a strand length.

288 Simultaneous type:

This subclass is indented under subclass 287. Subject matter wherein the strand is elongated while it is in the false twist crimping zone.

289 Fluid jet type:

This subclass is indented under subclass 284. Subject matter comprising a fluid jet stream which impinges the strand to impart the false twist to the strand or to treat the strand in addition to the false twist crimping.

SEE OR SEARCH THIS CLASS, SUBCLASS:

333, for fluid jet twisters used as false twisters.

350, for twisting operations combined with fluid jets.

SEE OR SEARCH CLASS:

28, Textiles: Manufacturing, subclasses 271+ for texturing by means of fluid jets.

290 Plural twisting or heating:

This subclass is indented under subclass 284. Subject matter wherein the strand is subjected to more than one false twisting or heating operation.

291 Operator accommodating frame arrangement:

This subclass is indented under subclass 284. Subject matter comprising false twist crimping apparatus wherein the framework is so arranged as to provide a passageway for operating personnel.

292 **With coating or impregnating:**
This subclass is indented under subclass 282. Subject matter including the application of a liquid or plastic treatment to the strand.

SEE OR SEARCH THIS CLASS, SUBCLASS:
7, 32 and 295+, for coating or impregnating combined with other twisting or covering or wrapping operations.
286, for coating or impregnating used in a false twist crimping operation.

293 **Alternate twist:**
This subclass is indented under subclass 1. Subject matter wherein the direction of twist imparted to a portion of a strand is opposite to the direction of twist imparted to an adjacent portion of the strand and is the same as the direction of twist imparted to an alternate portion of the strand.

SEE OR SEARCH THIS CLASS, SUBCLASS:
204+, for alternately twisted strand structures.

294 **Accumulator type:**
This subclass is indented under subclass 293. Subject matter including a strand storage and/or advancing device wherein the length of strand material contained therein changes periodically or continuously.

295 **With coating or impregnating:**
This subclass is indented under subclass 1. Subject matter wherein a fluid or plastic treatment is applied to the fibers being spun or to the strand being twisted, usually concomitantly with the spinning or twisting operation.

(1) Note. For purposes of this class, the term “coating or impregnating” is construed to include the situation wherein a strand is subjected to an operation wherein it softens or melts to such an extent that it becomes tacky and adheres or fuses to adjacent strand material.

(2) Note. The following Search Class references are directed to fluid treatment of textile strands involving no twisting.

SEE OR SEARCH THIS CLASS, SUBCLASS:
7, 32, 286, and 292, for covering or wrapping or twist crimping combined with a coating or impregnation operation.
217, 221, 223, 232+, 241+, 250+, 257, and 258+, for twisted strand structures which are coated or impregnated.

SEE OR SEARCH CLASS:
8, Bleaching and Dyeing: Fluid Treatment and Chemical Modification of Textiles and Fibers, appropriate subclasses.
19, Textiles: Fiber Preparation, subclasses 66+.
28, Textiles: Manufacturing, subclasses 167+ and 178+.
101, Printing, subclass 172.
118, Coating Apparatus, appropriate subclasses, and see Treatment of Textiles or Leather of the class definition for the line between Class 118 and the textile classes.
427, Coating Processes, appropriate subclasses.

296 **On twist device:**
This subclass is indented under subclass 295. Subject matter wherein the coating or impregnation is effected directly on or at the twisting device.

297 **Strand bonding or adhesion:**
This subclass is indented under subclass 295. Subject matter wherein the coating or impregnation is such as to cause the strand material being treated to adhere together in a unitary structure.

SEE OR SEARCH CLASS:
156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclasses 51+ for making a conductor of indefinite length combined with adhesive bonding; and subclasses 148+ for adhesive bonding with a broadly recited textile operation.

298 Wet drafting:

This subclass is indented under subclass 295. Subject matter wherein coated or impregnated fibrous material such as sliver or roving, is subjected to a drawing or attenuating operation while in a wet moist state.

SEE OR SEARCH THIS CLASS, SUBCLASS:

315+, for twisting combined with drafting.

SEE OR SEARCH CLASS:

19, Textiles: Fiber Preparation, subclasses 236+ for drafting structures, per se.

299 Transfer tail:

This subclass is indented under subclass 1. Subject matter wherein a length of strand material is wound, usually during the initial winding of the strand material on the bobbin and below the normal package windings for the purpose of connecting the length of strand material to other lengths of strand material on other bobbin packages during subsequent winding or unwinding operations.

SEE OR SEARCH THIS CLASS, SUBCLASS:

303, for winding strand lengths in a clearing operation. The winding may be at the base of the bobbin.

SEE OR SEARCH CLASS:

242, Winding, Tensioning, or Guiding, subclasses 476.2+ for end winding and preliminary winding of strand lengths.

300 Clearing:

This subclass is indented under subclass 1. Subject matter wherein lint, waste, foreign matter, or strand material which has become superfluous during the operation of the machine is removed.

SEE OR SEARCH CLASS:

15, Brushing, Scrubbing, and General Cleaning, appropriate subclasses for cleaning systems for removing lint and dust from textile machines.

19, Textiles: Fiber Preparation, subclasses 262+ for clearing rolls in drafting frames.

28, Textiles: Manufacturing, subclasses 222+ and 292+ for clearing threads and removing waste strand material from bobbins.

144, Woodworking, subclass 252.1 for a dust conveyor.

301 On open-end machine:

This subclass is indented under subclass 300. Subject matter wherein the clearing is effected in an open-end-type twister.

SEE OR SEARCH THIS CLASS, SUBCLASS:

58.89+, for open-end spinning operations, per se.

302 Rotor:

This subclass is indented under subclass 301. Subject matter wherein the clearing is effected in the rotor of an open-end twister.

303 Strand winding:

This subclass is indented under subclass 300. Subject matter wherein excess or superfluous strand material is accumulated by a winding operation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

299, for strand winding in forming transfer tails.

SEE OR SEARCH CLASS:

242, Winding, Tensioning, or Guiding, subclasses 476.2+ for end winding and preliminary winding of strand lengths.

304 Pneumatic:

This subclass is indented under subclass 300. Subject matter wherein the clearing is effected by means of a stream of air.

SEE OR SEARCH CLASS:

15, Brushing, Scrubbing, and General Cleaning, subclasses 301+ for air blast and/or suction devices for removing waste and lint from textile machines; and see (2) Note to subclass 301 for a statement of the line.

305 Strand type:
This subclass is indented under subclass 304. Subject matter wherein lengths of material in strand form are removed.

SEE OR SEARCH THIS CLASS, SUBCLASS:
261, for finding loose ends to be pieced up.

SEE OR SEARCH CLASS:
242, Winding, Tensioning, or Guiding, subclass 476 for end finders in reserve thread uniting.

306 Strand accumulating or scavenging:
This subclass is indented under subclass 300. Subject matter wherein waste or superfluous strand material is collected, accumulated, or scavenged.

307 Of traveler:
This subclass is indented under subclass 300. Subject matter wherein lint, fluff, etc., is removed from a traveler while the twisting apparatus is in operation.

SEE OR SEARCH THIS CLASS, SUBCLASS:
25+, for travelers, per se.

308 Atmospheric conditioning:
This subclass is indented under subclass 1. Subject matter wherein the temperature, humidity, ventilation, etc., of a spinning or twisting station is controlled.

SEE OR SEARCH CLASS:
34, Drying and Gas or Vapor Contact With Solids, appropriate subclasses for drying strands and gas or vapor treatment of textile apparatus.
236, Automatic Temperature and Humidity Regulation, appropriate subclasses controlling atmospheric conditions in particular areas.

309 Strand finishing or developing:
This subclass is indented under subclass 1. Subject matter wherein the twisted strand is subjected to a post treatment, such as polishing, drying, heat treating, etc., to develop or enhance the final product.

SEE OR SEARCH THIS CLASS, SUBCLASS:
290, for false twist crimping operations with additional heating to develop or modify the crimp.

SEE OR SEARCH CLASS:
26, Textiles: Cloth Finishing, appropriate subclasses for treating fabrics to present them in finished or marketable condition.
28, Textiles: Manufacturing, subclass 246 , 265+, and 281 for treating crimped or textured strands to enhance, shrink, or develop them; and subclass 285 for thermal treatment of strands on a bobbin or cop.

310 With stretching:
This subclass is indented under subclass 1. Subject matter wherein the strand being twisted is stretched or elongated concomitantly with or subsequent to the twisting operation.

SEE OR SEARCH THIS CLASS, SUBCLASS:
287+, for false twist crimping combined with a stretching operation.

SEE OR SEARCH CLASS:
28, Textiles: Manufacturing, subclasses 240+ for apparatus for stretching running strand lengths.
264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclass 288.4 for processes for stretching a strand length.

311 With wire or strand preforming or shaping:
This subclass is indented under subclass 1. Subject matter wherein wires or strands are formed into substantially the shape they are to have in the final twisted structure.

(1) Note. The preforming or shaping is usually for the purpose of preventing backtwist or to facilitate even laying of the strands in a rope or cable.

SEE OR SEARCH THIS CLASS, SUBCLASS:

9, for operation to preform or shape the wire or strand prior to a covering or wrapping operation.

138, for elements forming parts of stranding machines for compressing, guiding, or shaping the strand.

SEE OR SEARCH CLASS:

72, Metal Deforming, subclasses 221+ and 274+ for wire shaping by rolling and drawing respectively.

140, Wireworking, appropriate subclasses for wire manipulating operations.

312 With strand or package manipulation:

This subclass is indented under subclass 76. Subject matter including guiding or handling the strand or package, usually after the centrifugal pot is filled and the strand therein is to be rewound onto another support.

(1) Note. Centrifugal spinning pot operations including restarting, rewinding, package or cheese changing, or strand threading should be placed as originals in this subclass rather than in subclasses 261, 266+, or 279+.

SEE OR SEARCH THIS CLASS, SUBCLASS:

261, for piecing up operations.

266+, for doffing or donning operations.

279, for threading up operations.

313 With rewinding:

This subclass is indented under subclass 1. Subject matter wherein a twisted strand wound on a package is rewound onto another package with or without other strands or other twisting operations.

(1) Note. See appropriate subclasses of this class for particular twisting operation employed.

SEE OR SEARCH CLASS:

242, Winding, Tensioning, or Guiding, appropriate subclass for particular winding operation employed.

314 Stranding:

This subclass is indented under subclass 1. Subject matter wherein a plurality of wires or strands are formed into a twisted structure by twisting or laying-up at a point between the strand supply and the take-up of the twisted structure.

SEE OR SEARCH THIS CLASS, SUBCLASS:

3, 58.3+, 58.52+, 59+, 66+, and 293+, for stranding involving a covering or wrapping operation, an alternating twist operation, a ship-type strander, a multiple twist type stander, a delivery twist type strander, and a receiving twist type strander.

315 With drafting:

This subclass is indented under subclass 1. Subject matter wherein fibrous material, usually in substantially untwisted condition, as in a sliver or roving, is subjected to an attenuating or drawing operation combined with a twisting or twining operation so that the attenuation results in a reduced cross section in the sliver or roving due to relative longitudinal displacement of the individual fibers.

SEE OR SEARCH THIS CLASS, SUBCLASS:

97, for driving of drafting rolls with speed adjustment.

310, for twisting combined with stretching concomitantly with, or subsequent to twisting.

SEE OR SEARCH CLASS:

19, Textiles: Fiber Preparation, subclasses 236+ for drafting structure, per se.

316 Domestic:

This subclass is indented under subclass 315. Subject matter comprising manual twisting operations, as with spinning wheels and the like, usually with no means for feeding the strands to be spun and producing a single strand.

(1) Note. The drafting is usually accomplished manually during the twisting.

317 Variable draft:
This subclass is indented under subclass 315. Subject matter wherein the drafting operation includes cyclical or random variations or fluctuations.

(1) Note. Such devices may function by changing the relative linear speeds of feed and delivery means, by changing the distance between drawing and holding means, or by imparting an intermittent or transitory motion to the work strand by means additional to the normal drafting means.

SEE OR SEARCH CLASS:
19, Textiles: Fiber Preparation, subclasses 237+ for variable drafting means, per se.

318 False twist type:
This subclass is indented under subclass 317. Subject matter in which at least one of the twisting operations includes imparting only a false twist to the strand material being drafted.

SEE OR SEARCH THIS CLASS, SUBCLASS:
328+, for false twisting combined with non-variable drafting operations.
332+, for false twisters, per se.

319 Intermittent:
This subclass is indented under subclass 315. Subject matter wherein the strand material is successively drafted, twisted, and wound in a cyclic operation.

320 Mule type:
This subclass is indented under subclass 319. Subject matter comprising spindles mounted to move toward and away from a feeding mechanism during the twisting and winding operation, and the drafting is accomplished by the movement of the spindles away from the source of supply.

321 Spindle drive control:
This subclass is indented under subclass 320. Subject matter including means for driving and regulating the speed of the spindles.

322 Quadrant:
This subclass is indented under subclass 321. Subject matter wherein the speed-regulating mechanism includes a sector known as the quadrant.

323 Faller controlled:
This subclass is indented under subclass 322. Subject matter comprising means to regulate the speed of the spindles according to the tension of the yarn through a connection with the elements which guide and properly lay the yarn upon the bobbin or other core.

(1) Note. Compare this class, subclasses 324 and 325.

324 Faller control:
This subclass is indented under subclass 320. Subject matter having means for controlling the motion of elements (e.g., fallers) which guide and tension the yarn during the twisting and winding operation.

(1) Note. Compare this class, subclass 323.

325 Copping rail:
This subclass is indented under subclass 324. Subject matter comprising a fixed or adjustable guide bar having the function of a cam which determines the faller movement.

326 Feed control:
This subclass is indented under subclass 320. Subject matter including means for driving and regulating the speed of rollers or other devices which feed the fibrous material to be drafted and twisted.

327 With carding:
This subclass is indented under subclass 315. Subject matter wherein the fibers are worked and made substantially parallel by passing between relatively moving surfaces which are almost in contact and have points or teeth thereon prior to drafting and twisting.

SEE OR SEARCH CLASS:
19, Textiles: Fiber Preparation, for carding, feeding, or drafting structure, particularly subclasses 98+.

328 False twist type:
This subclass is indented under subclass 315. Subject matter in which at least one of the twisting operations includes imparting only a false twist to the strand material being drafted.

(1) Note. A false twist is one that is counterbalanced by a simultaneously produced, equal and opposite twist, as set forth in the definition of subclass 332.

SEE OR SEARCH THIS CLASS, SUBCLASS:
318, for false twist devices combined with means to produce a variable drafting effect.
332+, for false twisters, per se.

329 Interstage:
This subclass is indented under subclass 328. Subject matter comprising a false twister interposed between two stages of a drafting operation.

(1) Note. To be classified in this subclass, at least one false twister must be located in a zone in which no drafting occurs.

330 With self-contained drawing means:
This subclass is indented under subclass 328. Subject matter wherein an element of the drafting mechanism is part of, or mounted on, the false twister.

(1) Note. Such means commonly comprise a twister in which the twisting and untwisting rotation is imparted to the strand by means of a pair of revolvable and rotatable rolls and further characterized by the fact that such rolls are rotated at a speed differing from that of another cooperating pair of drafting rolls mounted independently of the twister.

SEE OR SEARCH THIS CLASS, SUBCLASS:
335+, for twisters of the revolvable roll pair type in which the twister-rollers do not perform any drafting function.

331 Friction type:
This subclass is indented under subclass 328. Subject matter having means wherein the false twist and the resultant rotation of the strand material about its axis is effected by a frictional force or forces applied substantially tangentially to the periphery of the strand.

SEE OR SEARCH THIS CLASS, SUBCLASS:
334+, for friction-type false twist devices not combined with drafting means.

332 False twist device:
This subclass is indented under subclass 1. Apparatus which produces a twist of filaments or fibers in one portion of a strand that is equal, and of opposite hand, to that simultaneously produced in an adjacent portion of the strand.

(1) Note. Since the algebraic sum of the twistings in the strand effected by machines of this subclass is zero, the operation is frequently termed a “false twist”.

(2) Note. Machines of this subclass usually comprise devices which rotate a portion of a strand about its axis, intermediate its ends, without rotation of either end of the strand relative to the other, to produce opposite twists in the strand.

(3) Note. The devices of this subclass include electrostatic charging means, devices supported by the yarn being twisted, and twist devices which are an extension of an electric motor.

SEE OR SEARCH THIS CLASS, SUBCLASS:
318, for false twist devices combined with means to produce a variable drafting effect.
328+, for false twist devices combined with drafting mechanism.

SEE OR SEARCH CLASS:
118, Coating Apparatus, subclass 44 for false twist devices combined with means to coat a strand (yarn, roving, sliver, etc.) while it is under the influence of the false twister.

333 Having fluid jet twisting means:
This subclass is indented under subclass 332. Subject matter wherein the false twist is produced by an inlet in the false twist device through which a jet stream of fluid matter is introduced tangentially into the twisting zone of the device, thus creating a false twist in the strand.

334 Friction type:
This subclass is indented under subclass 332. Subject matter in which the rotation of the strand material about its axis is caused by a frictional force or forces applied substantially tangentially to the periphery of the strand.

SEE OR SEARCH THIS CLASS, SUBCLASS:
331, for friction-type false twisters combined with drafting means.

335 Revolving roll-pair type:
This subclass is indented under subclass 334. Apparatus including at least one pair of rollers through whose bight the strand passes, and which are revolvable jointly about an axis which is substantially coincident with the path of travel of the strand.

SEE OR SEARCH THIS CLASS, SUBCLASS:
330, for false twisters of the revolvable rollers type in which the rollers comprise one element of a fiber drafting stage.

336 Having a frictional belt:
This subclass is indented under subclass 334. Subject matter wherein the frictional force for twisting the strand is created by a portion of a moving belt which rubs against another portion of the same belt, the strand being twisted in the rubbing portion of the belt.

337 Having a frictional disc:
This subclass is indented under subclass 334. Subject matter wherein the frictional force applied to the yarn strand is created by a surface of a rotating wheellike device which contacts the strand to produce the false twist.

(1) Note. The yarn strand is not intended to go through any aperture which may be in the disc.

(2) Note. The disc of this subclass is generally thin in thickness relative to its diameter.

(3) Note. This subclass includes plural discs.

338 On plural axes:
This subclass is indented under subclass 337. Subject matter wherein at least one of the plural discs rotates about an axis which is not common to the axis or axes of the other disc or discs.

(1) Note. One or more discs may be on the same axis.

(2) Note. The axes of this subclass are generally parallel to one another.

(3) Note. The yarn being twisted usually follows a tortuous or zigzag path.

339 With discs overlapping:
This subclass is indented under subclass 338. Subject matter wherein at least one of the discs on one of the axes overlaps at least one of the discs on at least one other axis.

(1) Note. The terminology “overlap” may be synonymous with “intermesh” in the event more than two discs overlap.

340 With nonperipheral surface of discs substantially abutting:
This subclass is indented under subclass 339. Subject matter wherein at least a portion of at least one of the two sides of at least one of the rotating discs makes contact with another disc side or is so closely spaced from the other disc side so as to permit a given size yarn strand to be twisted therebetween.

341 Having a frictional tube, or a twisting head therefor, through which yarn passes:
This subclass is indented under subclass 334. Subject matter wherein the frictional force applied to the yarn strand is created by the peripheral surface surrounding an aperture or

opening which is formed in a tubelike structure.

(1) Note. Twisting heads or inserts which are generally used for replacing a worn-out end of a twist tube which has a removable head or insert are also in this subclass.

(2) Note. The yarn strand has to pass through the aperture to receive the false twist.

SEE OR SEARCH THIS CLASS, SUBCLASS:

344+, for similar twist devices, but having a yarn-gripping means for holding the yarn strand to permit the twisting thereof.

342 Plural twist tubes:
This subclass is indented under subclass 341. Subject matter wherein plural tubes are utilized in the twist device.

343 Including mounting, support, or housing:
This subclass is indented under subclass 341. Subject matter including means to mount, support, shield, or enclose the twist tube.

344 Having a tube, or a twisting head therefor, through which yarn passes, with a yarn gripper:
This subclass is indented under subclass 332. Subject matter wherein the yarn strand passes through a longitudinally apertured tubelike device having a means for gripping or holding the strand against rotation at a point on the strand, but not against the movement of the strand in its path of movement through the device.

(1) Note. Twisting head or inserts having a strand gripping or holding means which are generally used for replacing a worn-out end of a twist tube which has a removable head or insert are also in this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

341+, for similar twist devices, but without the yarn strand gripping or holding means.

345 Plural tubes:
This subclass is indented under subclass 344. Subject matter wherein plural tubes are utilized in the twist device.

346 Including mounting, support, or housing:
This subclass is indented under subclass 344. Subject matter including means to mount, support, shield, or enclose the device which produces the false twist.

347 Magnetic support:
This subclass is indented under subclass 346. Subject matter wherein the means to mount or support the device is magnetic.

348 Including mounting, support, or housing:
This subclass is indented under subclass 332. Subject matter including means to mount, support, shield, or enclose the device which produces the false twist.

349 Magnetic support:
This subclass is indented under subclass 348. Subject matter wherein the means to mount or support the device is magnetic.

350 With fluid jet:
This subclass is indented under subclass 1. Subject matter comprising a fluid jet stream which impinges the strand being twisted.

SEE OR SEARCH THIS CLASS, SUBCLASS:

289, for false twist crimpling employing a fluid jet.

333, for a fluid jet false twister, per se.

SEE OR SEARCH CLASS:

28, Textiles: Manufacturing, subclasses 254+ and 271+ for texturing by means of a fluid jet.

351 With other type crimping or texturing:
This subclass is indented under subclass 1. Subject matter wherein the strand is subjected to a crimping or texturing operation other than twist crimping, usually before or concomitantly with the twisting operation.

SEE OR SEARCH CLASS:

28, Textiles: Manufacturing, subclasses 247+ for crimping or texturing by other than a twisting operation.

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclass 168 for extrusion of filaments combined with crimping.

352 Strand guiding or guarding:

This subclass is indented under subclass 1. Subject matter including a spinning or twisting device or parts thereof having means to guide or direct the strands to the device for imposing suitable tension on the strands and/or having means for preventing entanglement of the strands during the twisting operation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

80+, for strand guides equipped with starting or stopping initiating mechanism.

SEE OR SEARCH CLASS:

242, Winding, Tensioning, or Guiding, subclasses 157+ for strand guides, per se.

353 Catching or holding:

This subclass is indented under subclass 352. Subject matter including a guiding device provided with means to catch and hold strands to prevent entangling when they leave the normal path of travel or become broken, kinked, or knotted during the twisting operation.

(1) Note. Compare this class, subclasses 86 and 87.

SEE OR SEARCH CLASS:

226, Advancing Material of Indeterminate Length, subclasses 91+ for a threading device for a web or strand feeder.

354 Separator or balloon limiter:

This subclass is indented under subclass 352. Subject matter including a device which surrounds, partially surrounds, or is located between two twisting devices in such a manner so that adjacent strands are kept separated during the twisting operation.

(1) Note. This subclass includes balloon control devices which are inherently a separator.

(2) Note. The separator or balloon control device may be located along one or more sides of one twisting device or along one or more sides of a row of twisting devices.

SEE OR SEARCH THIS CLASS, SUBCLASS:

121, for rings and travelers provided with guards or protectors.

355 Having antifriction coating or material:

This subclass is indented under subclass 354. Subject matter wherein the separator is either made from a material having a low frictional resistance or is coated with a material having a low frictional resistance.

SEE OR SEARCH CLASS:

118, Coating Apparatus, subclass 44 for false twist devices combined with means to coat a strand (yarn, roving, sliver, etc.) while it is under the influence of the twister.

356 Readily removable or adjustable:

This subclass is indented under subclass 354. Subject matter wherein the separator is mounted so that it may be either adjusted properly between spindles and/or twisters or may be easily removable to allow rethreading, cleaning, etc.

357 Having threading slot:

This subclass is indented under subclass 354. Subject matter wherein the separator is constructed so as to allow a strand to be readily passed through it for rethreading a spindle.

358 Threadboard:

This subclass is indented under subclass 352. Subject matter including a rail or support which may comprise either a single piece or a plurality of pieces on which one or more strand guides are mounted on each piece.

(1) Note. This device relates only to spinning or throwing machines, and not to rope or cordage machines generally.

SEE OR SEARCH THIS CLASS, SUBCLASS:

353, for a thread guide having catching or holding means for broken yarn strand ends.

SEE OR SEARCH CLASS:

242, Winding, Tensioning, or Guiding, subclasses 157+ for guides, per se.

359 Traversing:

This subclass is indented under subclass 358. Subject matter in which the threadboard partakes of part or all of the movement of the traversing element of the twisting device; the board may at the same time move to or from the strand receiver.

360 With lifting means:

This subclass is indented under subclass 358. Subject matter in which the threadboard is provided with means to move it from proximity to the spindle tip usually to facilitate doffing.

361 Lay head:

This subclass is indented under subclass 352. Subject matter including apparatus for guiding strands to a closing point at which the so guided strands will be twined together.

362 Processes:

This subclass is indented under subclass 1. Processes falling within the main class definitions and not provided for in any subclass above.

(1) Note. Only those patents which contain method claims which are susceptible to being practiced by a plurality of different devices or which are drawn to functions not provided for above should be placed herein, either on an original or cross-reference basis. Those patents containing method claims which are limited to the operation of a single above provided for apparatus will be found in the appropriate subclass.

(2) Note. Any appropriate subclass above, for a process patent having apparatus or other limitations sufficient to warrant placement therein.

400 Open end spinning:

This subclass is indented under subclass 1. Subject matter wherein a strand is rotated about its axis while the free end or "tail" thereof is in contact with, or in proximity to, a source of supply of loose, discrete fibers or fiberlike material which is thus twisted into the strand.

(1) Note. This operation is also commonly referred to as free end spinning or break spinning and requires the use of a seed yarn to engage the supply of loose fibers in order to initiate the operation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5, for covering or wrapping operations in which discrete fibers are helically wrapped about a core strand.

263, for piecing up open-end machines.

301, for clearing open-end machines.

401 Friction:

This subclass is indented under subclass 400. Subject matter wherein the rotation of the strand about its axis is caused by a frictional force or effort applied substantially tangentially to the periphery of the strand.

SEE OR SEARCH THIS CLASS, SUBCLASS:

331, for friction type false twisters combined with drafting means.

334+, for friction type false twisters, per se.

402 Electrostatic:

This subclass is indented under subclass 400. Subject matter wherein the supply of discrete fibers is passed through an electrostatic field to align the fibers prior to being twisted.

403 Fluid:

This subclass is indented under subclass 400. Subject matter wherein the twist is produced by subjecting both the free end of the strand and the supply of discrete fibers to the action of a fluid vortex.

(1) Note. Devices found herein are also referred to as "Gotzfried" type devices.

SEE OR SEARCH THIS CLASS, SUBCLASS:

289, for false twist crimping employing a fluid jet.

333, for fluid jet false twisters, per se. 350, for other twisting operations combined with fluid jets.

SEE OR SEARCH CLASS:

28, Textiles: Manufacturing, subclasses 254+ and 271+ for texturing by means of a fluid jet.

404 Rotating chamber type:

This subclass is indented under subclass 400. Subject matter wherein the fibers are urged by centrifugal force against a wall portion of a rotating hollow body and advanced axially thereof to be twisted into the free end of the rotating strand.

(1) Note. These devices are usually frustoconical in shape and the fibers slide along the walls of the chamber while advancing from smaller diameter portions toward larger diameter portions.

405 With strand controlled stopping:

This subclass is indented under subclass 404. Subject matter wherein the twisting operation is stopped in response to a condition of the strand or material being operated on, as by failure, exhaustion, too much or too little tension, undue accumulation, etc.

SEE OR SEARCH THIS CLASS, SUBCLASS:

19, for stopping, covering, or wrapping operations.

78+, for stopping or starting other twisting operations.

263, for piecing up open-end machines.

SEE OR SEARCH CLASS:

19, Textiles: Fiber Preparation, subclasses 0.2+ for similar subject matter associated with fiber preparation apparatus and methods.

28, Textiles: Manufacturing, subclasses 186+ for similar subject matter associated with the manufacture of textiles.

66, Textiles: Knitting, subclasses 158+ for similar subject matter associated with knitting processes or apparatus.

406 With housing for drive or support:

This subclass is indented under subclass 404. Subject matter combined with an enclosure (e.g., housing, frame, or casing) having means therein for driving, supporting, or mounting the rotating chamber or for driving, supporting, or mounting other components (such as fiber separating or feed devices) which cooperate with the rotating chamber.

(1) Note. To be placed in this subclass, the means for driving, supporting, or mounting should include sufficient structural details to provide more than a nominal recitation thereof.

SEE OR SEARCH THIS CLASS, SUBCLASS:

92+, for drive systems for spinning or twisting machines.

129+, for mounting receiving elements such as spindles in spinning or twisting machines.

SEE OR SEARCH CLASS:

74, Machine Element or Mechanism, appropriate subclasses for drive systems.

384, Bearings, appropriate subclasses for mounting and supporting spindle shafts in bearings.

475, Planetary Gear Transmission Systems or Components, for planetary gear drives.

407 Having operator access:

This subclass is indented under subclass 406. Subject matter wherein the housing, frame, or casing is constructed or arranged to provide quick or easy access to the means or components housed therein.

(1) Note. Devices such as hinged covers or sliding panels are commonly used to provide the access to the components within the housing.

408 With fiber separating and/or feeding:
This subclass is indented under subclass 404. Subject matter combined with a device or means which operates on a supply of fibrous material to disintegrate it into discrete fiber form and/or feeds the discrete fibers to the rotating chamber.

(1) Note. These devices may be referred to as opening rolls, combing rolls, or carding rolls. They also may comprise conventional drafting rolls.

SEE OR SEARCH THIS CLASS, SUBCLASS:
327, for carding devices combined with drafting in spinning machines.

SEE OR SEARCH CLASS:
19, Textiles: Fiber Preparation, subclasses 80+, 98+, 115+, and 236+ for picking, carding, combing, and drafting fibers.

409 Plural or variable feed:
This subclass is indented under subclass 408. Subject matter wherein the supply of discrete fibers is fed to a single twisting zone from more than one source, or the supply of discrete fibers is fed to a twisting zone at a variable or pulsating rate.

SEE OR SEARCH THIS CLASS, SUBCLASS:
90+, for feeding or irregular feeding of strand material in spinning or twisting operation.

410 Coaxial roll:
This subclass is indented under subclass 408. Subject matter wherein the device or means which operates on the supply of fibrous material is a roll which rotates about an axis coaxial with the axis of rotation of the rotating chamber.

411 With fluid flow controlling or directing:
This subclass is indented under subclass 408. Subject matter wherein the fiber separating and/or feeding means utilizes a current of fluid and includes means for directing or controlling the current of fluid or for providing an additional or supplemental fluid flow in the separating and/or feeding zones other than for or in addition to the purpose of merely transporting the discrete fibers to the rotating chamber.

(1) Note. The fluid flow referred to herein is other than the conventional fluid flow which exists in open-end systems as a result of the use of an under pressure to assist in transporting the fibers to the rotating chamber.

SEE OR SEARCH THIS CLASS, SUBCLASS:
301+, and 304+, for the use of pneumatic systems in clearing twisting devices.

412 With specific feed device for opening roll:
This subclass is indented under subclass 408. Subject matter wherein the fiber separating and/or feeding means utilizes an opening, combining, or carding type roller and wherein structural details of a feed device positioned to cooperate with the opening roller for feeding fibrous material to the opening roller to be disintegrated into discrete fibers are recited.

(1) Note. To be placed in this subclass, the feed device should include sufficient structural details to provide more than a nominal recitation thereof.

(2) Note. Feed rolls, silver guides, and condensers are commonly used as the feed device for the opening roller.

SEE OR SEARCH CLASS:
19, Textiles: Fiber Preparation, subclass 105, 246, and 288+ for feeding and guiding devices for carding machines or drafting frames.

413 With specific rotor feed channel:
This subclass is indented under subclass 408. Subject matter including structural details of a guide passageway or channel for directing the discrete fibers from the fiber separating and/or feeding means to the rotating chamber.

(1) Note. To be placed in this subclass, the feed channel should include sufficient structural details to provide more than a nominal recitation thereof.

414 Rotor with fiber accreting portion:
This subclass is indented under subclass 404. Subject matter wherein the discrete fibers accumulate in a groove or section of greatest diameter in the rotating chamber and in which groove or section the free end of the rotating strand engages the discrete fibers to twist the fibers into the strand.

415 With fluid flow controlling or directing:
This subclass is indented under subclass 414. Subject matter wherein the rotor utilizes a current of fluid and includes means for directing or controlling the current of fluid or for providing an additional or supplemental fluid flow within the rotor other than for or in addition to the purpose of merely transporting the discrete fibers within the rotor.

(1) Note. The fluid flow referred to herein is other than the conventional fluid flow which exists in open-end systems as a result of the use of an under pressure to assist in transporting the fibers to the rotating chamber.

SEE OR SEARCH THIS CLASS, SUBCLASS:
301+, and 304+, for the use of pneumatic systems in clearing twisting devices.

416 Specific wall configuration:
This subclass is indented under subclass 414. Subject matter including structural details of the walls of the rotor with respect to angular positioning, size, or structure, for example.

417 With specific yarn guiding device:
This subclass is indented under subclass 414. Subject matter including structural details of a guide device for directing the twisted strand passing out of the rotor.

(1) Note. To be placed in this subclass, the guide device should include sufficient structural details to provide more than a nominal recitation thereof.

(2) Note. Tube elements are commonly used as the guide in these devices and are frequently referred to as “withdrawal tubes”.

SEE OR SEARCH THIS CLASS, SUBCLASS:
352+, for strand guiding in spinning or twisting machines.

SEE OR SEARCH CLASS:
242, Winding, Tensioning, or Guiding, subclasses 157+ for yarn guides, per se.

CROSS-REFERENCE ART COLLECTIONS

The following subclasses are collections of published disclosures pertaining to various specified aspects of the twisted strand structure art which aspects do not form appropriate bases for subclasses in the foregoing classification wherein original copies of patents are placed on the basis of the structure or composition of a strand. These subclasses assist a search based on remote function or physical characteristic of the twisted strand structure and may be of further assistance to the searcher, either as a starting point in searching this class or as an indication of further related fields of search inside or outside the class.

(1) Note. Disclosures are placed in these subclasses for their value as references and as leads to appropriate main or secondary fields of search without regard to their original classification or their claimed subject matter.

(2) Note. The disclosures found in the following subclasses are examples only of the indicated subject matter, and in no instance do they represent the entire extent of the prior art.

901 ANTISTATIC:
Twisted strand structures which reduce or dissipate static electricity due to the particular structural components of the strand or because of some treatment to which the strand has been subjected.

SEE OR SEARCH CLASS:
361, Electricity: Electrical Systems and Devices, subclasses 212+ for discharging static electricity.

902 REINFORCING OR TIRE CORDS:
Twisted strand structures which are used in such devices as drive belts, conveyor belts,

automobile tires, etc., in order to strengthen or increase the wear resistance of the device.

SEE OR SEARCH CLASS:

152, Resilient Tires and Wheels, subclass 556, 557 and 558+ for tire carcass reinforcement cords.

474, Endless Belt Power Transmission Systems or Components, particularly subclasses 237+ for a friction drive belt for a power transmission.

903 SEWING THREADS:

Twisted strand structures having particular structural features or properties which are useful when the strand is used as a sewing thread.

SEE OR SEARCH CLASS:

112, Sewing, subclasses 400+ for sewn pro-ducts.

904 FLAME RETARDANT:

Twisted strand structures used primarily in clothing and made so as to afford defense against fire.

SEE OR SEARCH CLASS:

2, Apparel, subclass 5, 7, and 8 for a heat resistant head covering for a person.

252, Compositions, subclasses 2+ for a composition which may be used to extinguish fires or as a coating or impregnation to act as a defense against fire or flame.

905 BICOMPONENT MATERIAL:

Twisted strand structures in which the individual fibers or filaments from which the strand is made are formed of at least two different compositions such that, in a cross section of an individual fiber or filament, the different compositions are side by side with a connecting web therebetween or one composition is substantially enclosed in the other (sheath-core type).

SEE OR SEARCH CLASS:

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, Digest 26 for extruding composite fibers made of two or more materials.

428, Stock Material or Miscellaneous Articles, subclass 370, 373, and 374 for multicomponent fibers or filaments.

906 LINE APPLIANCES:

Helically preformed twisted wire elements, usually of a finite length, adapted to fit over an existing line, cable, or conductor for the purpose of enabling such line, cable, or conductor to be suspended from a support, or to otherwise provide a clamp, support, tie-down, or armor for the line, cable, or conductor. The wire elements are usually independent, finite lengths and a plurality of them are usually applied simultaneously to the line by a twisting action.

SEE OR SEARCH THIS CLASS, SUBCLASS:

9, and 311, for preforming and shaping wire elements used in strands.

212, for strands having spirally wrapped wires.

SEE OR SEARCH CLASS:

24, Buckles, Buttons, Clasps, etc., subclasses 115+ for cord and rope holders.

174, Electricity: Conductors and Insulators, subclass 79 for cables and conductors with supporting means.

248, Supports, subclass 63 for cable suspension clamps.

907 FOAMED AND/OR FIBRILLATED:

Twisted strand structures made from filamentary material which is porous or has cellular voids therein or from material which has been made filamentous usually by subjecting synthetic film, tape, or ribbon material to a treatment to split or break up the film, tape, or ribbon into a filamentous form.

SEE OR SEARCH THIS CLASS, SUBCLASS:

31+, for making twisted strands from web material.

235, 259 and 260, for twisted strands made from web material.

SEE OR SEARCH CLASS:

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, Digests 8 and 47 for splitting or fibrillating synthetic material.

428, Stock Material or Miscellaneous Articles, subclasses 304.4+ for webs or sheets made from foamed material.

908 JET INTERLACED OR INTERMINGLED:

Twisted strand material made from multifilaments which have been subjected to the treatment of a fluid jet to cause the filaments to interlace and intermingle with each other to produce a unitary structure. The jet treatment is usually such that no loops, whorls, or bulkiness is imparted to the filaments.

SEE OR SEARCH THIS CLASS, SUBCLASS:

289, and 350, for twisting operations using an air jet.

SEE OR SEARCH CLASS:

28, Textiles: Manufacturing, subclasses 274+ for air jet treatments to interlace multifilaments.

END